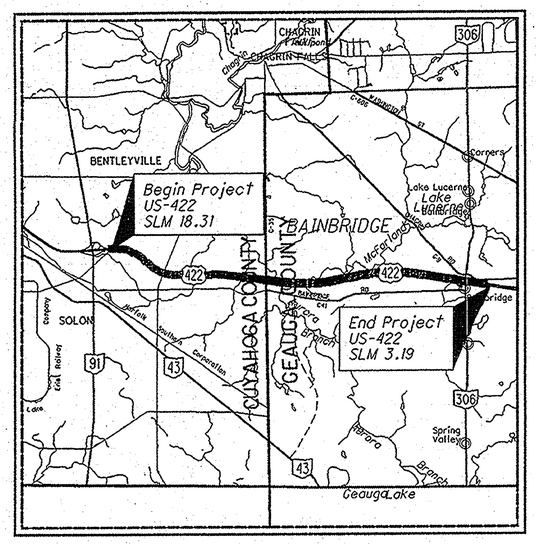


LOCATION MAP

LATITUDE: 41°23'16" N LONGITUDE: 81°22'55" W

SCALE IN MILES

0 1 2 3 4

N

PORTION TO BE IMPROVED

INTERSTATE HIGHWAY

FEDERAL ROUTES

STATE ROUTES

COUNTY & TOWNSHIP ROADS

OTHER ROADS

DESIGN DESIGNATION

	CUY-422-(18.31-20.09) GEA-422-(0.00-2.76)	GEA-422-(2.76-3.19)
CURRENT ADT (2015)	36,530	21,470
DESIGN YEAR ADT (2035)	40,290	24,140
DESIGN HOURLY VOLUME (2035)	3,930	2,410
DIRECTIONAL DISTRIBUTION	79%	77%
TRUCKS (24 HOUR B&C)	7%	11%
DESIGN SPEED	65 MPH	65 MPH
LEGAL SPEED	60/65 MPH	65 MPH

DESIGN FUNCTIONAL CLASSIFICATION:
URBAN MAJOR COLLECTOR

NHS PROJECT YES

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES

CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG

CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

OIL & GAS PRODUCERS UNDERGROUND
PROTECTION SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:
ODOT DISTRICT 12 PRODUCTION
5500 TRANSPORTATION BLVD.
GARFIELD HEIGHTS, OH 44125

ENGINEERS SEAL:

STATE OF OHIO
KEITH D. HAMILTON
E-72668
REGISTERED
PROFESSIONAL ENGINEER

SIGNED:
DATE: 2-27-2014

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

CUY/GEA-422-18.31/0.00

City of Solon
Bainbridge Township

Cuyahoga County
Geauga County

INDEX OF SHEETS:

PROJECT DESCRIPTION

THIS PROJECT PROVIDES FOR THE RESURFACING OF MAINLINE US-422 FROM SOLON RD. TO EAST OF SR-306. WORK ITEMS INCLUDE RESURFACING, GUARDRAIL REPLACEMENT, PLACEMENT OF PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS, MICRO-SILICA OVERLAY OF APPROACH SLABS, TOP OF BACKWALL REPAIRS, AND FULL-DEPTH REPLACEMENT NEAR APPROACH SLABS.

PROJECT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)

2013 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVED THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED
DATE 02-27-14 DISTRICT DEPUTY DIRECTOR

APPROVED
DATE 11-19-14 DIRECTOR, DEPARTMENT OF TRANSPORTATION

STANDARD CONSTRUCTION DRAWINGS

BP-3.1	4/20/12	MT-95.30	7/19/13	TC-61.10	4/20/12					SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
BP-5.1	7/19/13	MT-95.40	7/19/13	TC-61.30	4/20/12					800 10/17/14	
BP-9.1	7/19/13	MT-95.50	7/19/13	TC-65.10	4/20/12					832 1/17/14	
		MT-98.10	7/19/13	TC-65.11	4/20/12					847 12/31/12	
MGS-1.1	7/19/13	MT-98.11	7/19/13	TC-72.20	7/20/12						
MGS-2.1	7/19/13	MT-98.20	7/19/13	TC-73.10	4/20/12						
MGS-3.1	7/19/13	MT-98.22	7/19/13	TC-82.10	10/18/13						
MGS-3.2	1/18/13	MT-98.28	7/19/13								
MGS-4.2	7/19/13	MT-99.20	7/19/13								
MGS-4.5	1/18/13	MT-101.70	7/19/13								
MGS-5.3	7/19/13	MT-101.90	7/19/13								
		MT-105.10	7/19/13								

FEDERAL PROJECT NO. E140(319)

PID NO. 23961

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT NONE

CUY/GEA-422-18.31/0.00

1/44

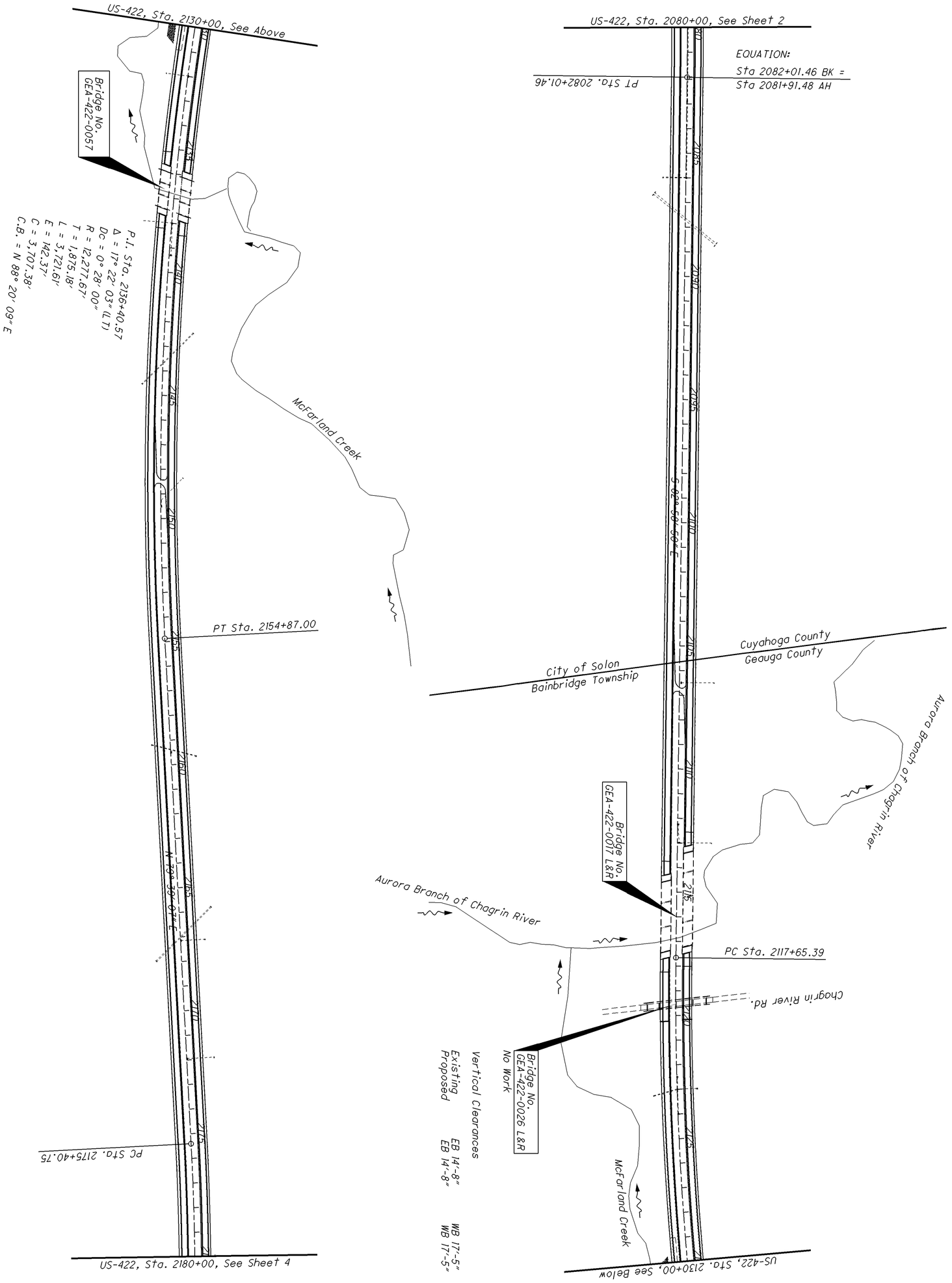
0 100 200 400
HORIZONTAL SCALE IN FEET

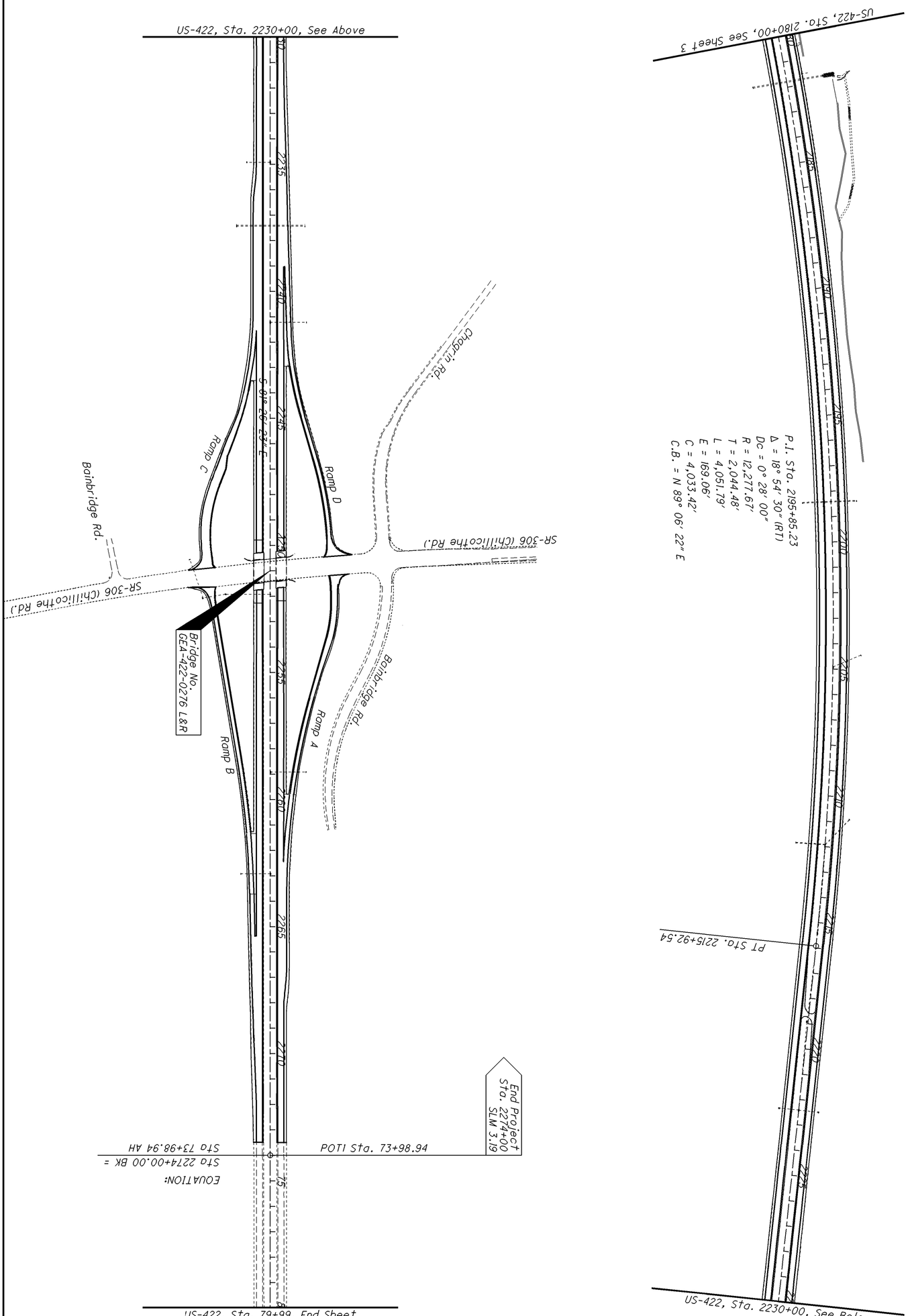
SCHEMATIC PLAN

CUY/GEA-422-18.31/0.00

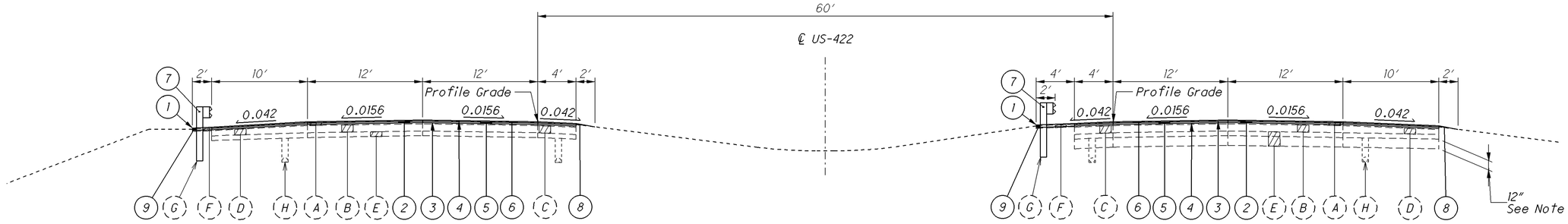
2
44

I:\PROJECTS\CUY\23961\roadway\sheets\23961GB001.dgn 28-FEB-2014 3:10PM jchio


US-422, Sta. 2130+00, See Above
Bridge No.
GEA-422-0057
P.I. Sta. 2136+40.57
Δ = 17° 22' 03" (LT)
Dc = 0° 28' 00"
R = 12,277.67'
T = 1,875.18'
L = 3,721.61'
E = 142.37'
C = 3,707.38'
C.B. = N 88° 20' 09" E
McFarland Creek
PT Sta. 2154+87.00
N 79° 39' 07" E
PC Sta. 2175+40.75
US-422, Sta. 2180+00, See Sheet 4
US-422, Sta. 2080+00, See Sheet 2
EQUATION:
Sta 2082+01.46 BK =
Sta 2081+91.48 AH
PT Sta. 2082+01.46
S 06° 00' 00" E
City of Solon
Bainbridge Township
Cuyahoga County
Geauga County
Aurora Branch of Chagrin River
Bridge No.
GEA-422-0017 L&R
Aurora Branch of Chagrin River
PC Sta. 2117+65.39
Chagrin River Rd.
Bridge No.
GEA-422-0026 L&R
No Work
Vertical Clearances
Existing EB 14'-8" WB 17'-5"
Proposed EB 14'-8" WB 17'-5"
McFarland Creek
US-422, Sta. 2130+00, See Below



4 / 44	CUY/GEA-422-18.31/0.00	SCHEMATIC PLAN	0 200 100 400 HORIZONTAL SCALE IN FEET

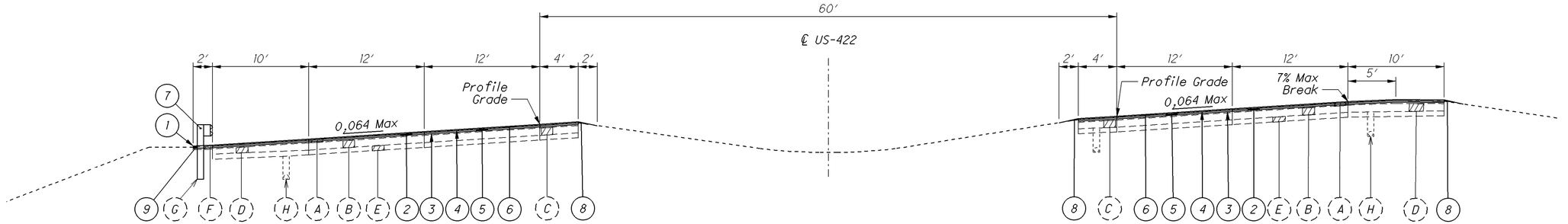


Normal Section

Sta. 2012+34.52 to Sta. 2017+91.21
Sta. 2040+92.90 to Sta. 2082+01.48 bk=
Sta. 2081+91.48 ah to Sta. 2075+33.21 bk=
Sta. 2017+40.75 ah to Sta. 2274+00.00

Sta. 2113+34.75 to Sta. 2117+43.75 Lt (Bridge No. GEA-422-0017)
Sta. 2114+28.92 to Sta. 2117+68.58 Rt (Bridge No. GEA-422-0017)
Sta. 2135+78.40 to Sta. 2137+79.60 (Bridge No. GEA-422-0057)
Sta. 2250+28.14 to Sta. 2251+83.16 (Bridge No. GEA-422-0276)

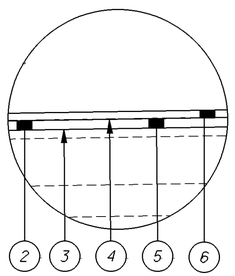
Note: Extra Depth Subbase
Sta. 2075+00.00 to Sta. 2080+00.00
Sta. 2093+50.00 to Sta. 2098+00.00
Sta. 2140+00.00 to Sta. 2143+00.00



Superelevated Section

Sta. 1994+00.00 to Sta. 2012+34.52 (Rt)
Sta. 2017+91.21 to Sta. 2040+92.90 (Lt)

Sta. 2021+27.08 to Sta. 2024+35.41 (Bridge No. CUY-422-1894)
Sta. 2029+55.97 to Sta. 2031+33.97 (Bridge No. CUY-422-1911)



Proposed Pavement Build Up

Existing Legend

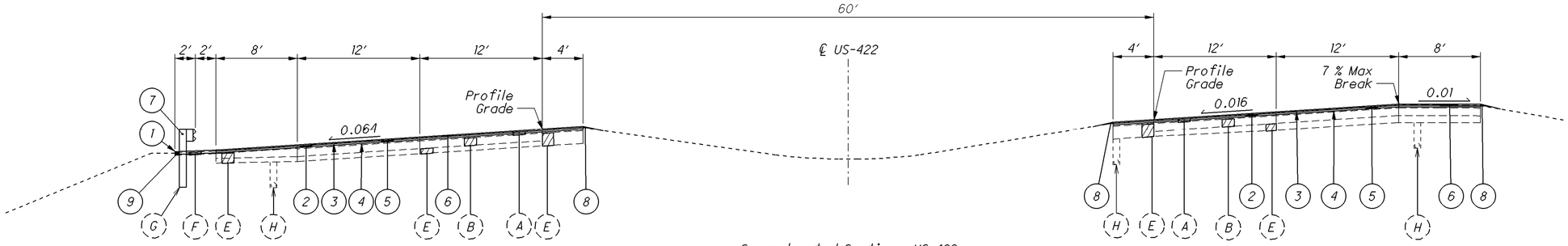
- (A) 3½" ± Asphalt Concrete
- (B) 9" ± Reinforced Concrete
- (C) 9" ± Plain Concrete
- (D) 6"-9" ± Plain Concrete
- (E) Subbase
- (F) Asphalt Under Guardrail
- (G) Guardrail
- (H) Underdrain
- (I) 1" ± Polymer Asphalt Concrete, Type B

Proposed Legend

- (1) Item 209 - Reshaping Under Guardrail, As Per Plan
- (2) Item 254 - Pavement Planing, Asphalt Concrete, 1¾"
- (3) Item Special - Tack Coat, Trackless Tack
- (4) Item Special - Tack Coat, Trackless Tack for Intermediate Course
- (5) Item 442 - Asphalt Concrete Intermediate Course, 19mm, Type A (446), 1¾"
- (6) Item 442 - Asphalt Concrete Surface Course, 12.5mm, Type A (446), As Per Plan, 1½"
- (7) Item 606 - Guardrail, Type MGS
- (8) Item 617 - Compacted Aggregate, As Per Plan
- (9) Item 448 - Asphalt Concrete Intermediate Course, Type 1, Under Guardrail, PG64-22, As Per Plan, 3"

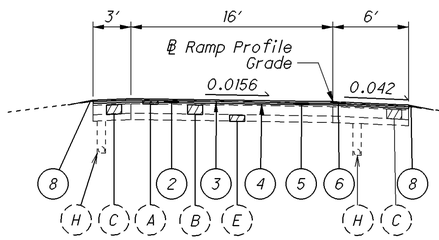
TYPICAL SECTIONS

CUY/GEA-422-18.31/0.00



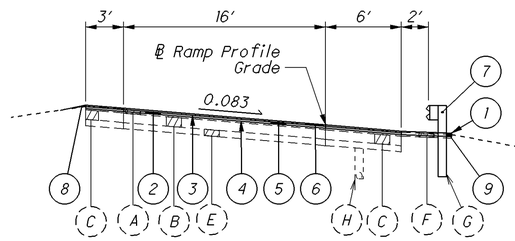
Superelevated Section - US-422

Sta. 956+13.03 to Sta. 962+03.64 bk = Sta. 1994+00.00



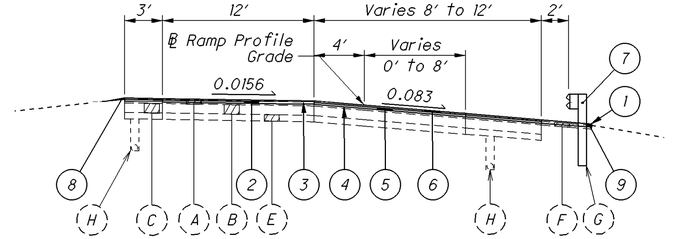
Normal Section

Sta. 2254+75.00 to Sta. 2255+25.00 Ramp A
Sta. 2251+52.03 to Sta. 2257+75.00 Ramp B



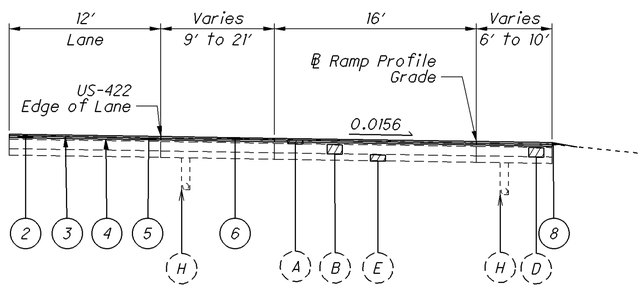
Superelevated Section

Sta. 2255+25.00 to Sta. 2259+87.47 Ramp A
Sta. 2257.75.00 to Sta. 2261+80.00 Ramp B
Sta. 2243+56.72 to Sta. 2245+25.00 Ramp C
Sta. 2243+30.00 to Sta. 2250+67.36 Ramp D



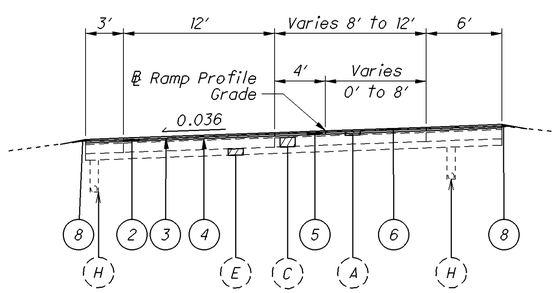
Superelevated Section With Widening

Sta. 2245+25.00 to Sta. 2246+50.00 Ramp C



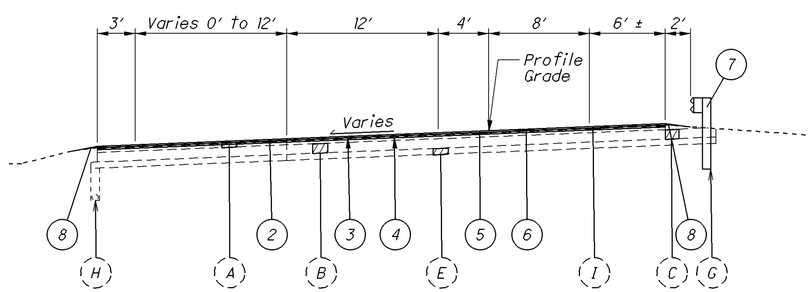
Acceleration Lane Details

Sta. 2261+80.00 to Sta. 2263+80.00 Ramp B
Sta. 2241+30.00 to Sta. 2243+30.00 Ramp D



Reverse Superelevated Section with Widening

Sta. 2250+94.04 to Sta. 2254+75.00 Ramp A



Ramp C Normal Section

Sta. 2246+50.00 to Sta. 2251+28.37

For Pavement Legends, See Sheet 5

TYPICAL SECTIONS

CUY/GEA-422-18.31/0.00

General

Project Description

This project consists of the rehabilitation of 5.35 miles of US-422 from SLM 18.31 (Solon Rd.) to SLM 3.19 (SR-306/Chillicothe Rd.) in the City of Solon in Cuyahoga County and Bainbridge Township in Geauga County.

Right of Way

All work shall be performed within the existing right of way or easements.

Existing Plans

Existing plans entitled CUY-422-16.33; Project 756-73, CUY-422-18.40, GEA-422-0.00; Project 857-86 and CUY/GEA-422-18.53/0.00; Project 205-01 may be inspected in the ODOT District 12 Office at:

Ohio Department of Transportation
District 12 Office
5500 Transportation Boulevard
Garfield Heights, Ohio 44125

Plan Sheet Stationing

The roadway was not surveyed prior to the preparation of these plans. Record drawings were used to prepare plan sheets and calculate estimated pavement area quantities and pavement markings.

Contingency Quantities

The Contractor shall not order materials or perform work for items designated by plan note to be used "as directed by the Engineer" unless authorized by the Engineer. The actual work locations and quantities used for such items shall be incorporated into the final change order governing completion of this project.

Equipment and Material Storage

In order to provide for the safety of the traveling public the Contractor's attention is directed to 614.03. In addition the following provisions shall apply:

1. Any removed items shall not be stored on the right of way for more than thirty (30) days.
2. The storage of equipment, materials, and vehicles within the highway right of way will be permitted. The number of areas and exact locations shall be approved by the Engineer.
3. All disturbed areas shall be returned to their original condition at no expense to the state.

Item 623 - Construction Layout Stakes and Surveying, As Per Plan

In addition to the requirements of the CMS, this item of work will include the following additional requirements.

An Ohio professional surveyor shall determine the minimum vertical clearances of all existing and new bridges within the project limits after completion of all the work, but prior to final acceptance of the project. At a minimum, measurements shall be taken along the centerline of each fascia beam at the edge of shoulders, edge lines, lane lines, and crown of the roadway below. The measurements shall be documented on the ODOT vertical clearance survey form. The form shall bear the stamp or seal of the Ohio professional surveyor who has taken the measurements. The Ohio professional surveyor shall submit the completed form to the Project Engineer and the district bridge maintenance engineer prior to final acceptance of the project.

Payment for all of the above work shall be at the unit price bid for Item 623 – Construction Layout Stakes, As Per Plan, which shall include all labor, equipment, materials and incidentals necessary to complete the above work.

Utilities

Listed below are all utilities located within the project construction limits together with their respective owners. The Ohio Department of Transportation has used the best available information to determine the utility companies serving this area but cannot guarantee that this utility company list is complete.

Electric:
First Energy - The Illuminating Company
6896 Miller Road
Brecksville, OH 44141
Attn: Mark Robinson,
Contract Specialist & Public Works Coordinator
Phone: (440) 717-6845
Cell Phone: (440) 550-9001
Fax: (440) 546-8780
Email: robinsonme@firstenergycorp.com

Gas:
Dominion East Ohio Gas Company
Transmission, Storage, & Gathering Facilities
320 Springside Dr., Suite 320
Akron, OH 44333
Attn: Mike Antonius,
Project Manager – Gas Design
Phone: (330) 664-2488
Fax: (330) 664-2686

Telecommunications:
AT&T
13630 Lorain Ave. – 4th Floor
Cleveland, OH 44111
Attn: James Janis, Design Manager
Phone: (216) 476-6142
Fax: (216) 476-6013

XO Communications
3 Summit Dr., Suite 750
Independence, OH 44131
Attn: Engineering & Construction Manager
Phone: (216) 619-3200
Fax: (216) 619-3684

Time Warner Cable
7 Severance Circle
Cleveland Heights, OH 44118
Attn: Dave Sobotka, Supervisor
Phone: (440) 366-0417, Ext. 625
OR
Attn: Lou Robertino, Field Engineer
Phone: (216) 663-4001, Ext. 111
Fax: (216) 581-3262

Windstream
100 Owen Brown St.
Hudson, OH 44236
Attn: Jeff Gulyas
Phone: (330) 650-8404
Email:
jeff.gulyas@windstream.com

Water:
City of Cleveland
Division of Water
1201 Lakeside Ave.
Cleveland, OH 44114
Attn: Tina Gosha
Phone: (216) 664-2444, Ext. 5526
Fax: (216) 664-2378

Tanglewood Water Division
17400 Haskins Rd.
Chagrin Falls, OH 44023
Phone: (440) 543-7424
Fax: (440) 543-7118

Geauga County Water Resources
470 Center St., Building #3
Chardon, OH 44024-1071
Director: Douglas L. Bowen P.E.
Assistant Sanitary Engineer:
Gerard R. Morgan, P.E.
Primary: (440) 279-1981
Office: (440) 285-2222
(440) 564-7131
(440) 834-1856
(440) 279-1970
Fax: (440) 285-9549
Email: gerrym@gcdwr.org

Lighting:
Ohio Department of Transportation
5500 Transportation Blvd.
Garfield Heights, OH 44125
Attn: Travis Bonnett, P.E., District Traffic Engineer
Phone: (216) 584-2220
Fax: (216) 584-2278

There are no underground utilities shown on this plan. The nature of the work required by this project will not affect any known underground utilities that exist under or adjacent to the work area.

Staging Areas

There are no specific areas given in the plans for the Contractor to use as a staging area(s). If the Contractor wants to use an area(s) for staging, regardless if it falls within the project limits or not, the Contractor is to contact Jill Powers at 216-584-2195 at District 12 in order to apply for a permit per Section 107.02 of the CMS.

If a permit is granted, all conditions of the permit shall be met in addition to the requirements of 104.04 of the CMS, at no additional cost to the State. If the Project Engineer deems that all the conditions of the permit were not met, then 10% of the Contract bid amount for mobilization shall be withheld until all the conditions of the permit are satisfied.

Protection of Right-of-Way Landscaping

Prior to beginning work, the Contractor, the Project Engineer, and a representative of the maintaining agency will review and record all landscaping items within the right-of-way (both within and outside the construction limits). A record of this review will be kept in the Project Engineer's files. Prior to final acceptance, a final review of landscaping items will be made.

Constrict all activities, equipment storage, and staging to within the construction limits. Unless otherwise identified in the plans or proposal, the construction limits are identified as 30 feet [10 meters] from the edge of pavement.

Submit a written request to the Project Engineer to use any area outside these limits. The document submitted must clearly identify the area and explain the proposed use and restoration of the area. Use of these areas for disposal of waste material and construction debris, excavation of borrow material, and placement of portable plants is prohibited. The request must be approved, in writing, before the Contractor has permission to use the area.

Any items damaged beyond the construction limits as defined above will be replaced in kind or as approved by the Project Engineer.

Item 619 Field Office, Type C

A Type C Field Office is required for this project.

619, Field Office, Type C .....**15 Months**

Work Limits

The work limits shown on these plans are for physical construction only. Provide the installation and operation of all work zone traffic control and work zone traffic control devices required by these plans whether inside or outside these work limits.

Cooperation Between Contractors

The Contractor shall cooperate and coordinate his/her operations with the contractors on other projects that may be in force during the life of the contract. No waiver of any provisions of 105.07 of the Construction and Material Specifications is intended.

CALCULATED | CHECKED

GENERAL NOTES

CUY/GEA-422-18.31/0.00

Roadway

Item 202 Removal, Misc.: Sleeper Slab Removed

Remove the existing 9" concrete sleeper slab and backfill void with materials conforming to the requirements of 304 as given in the Pavement Replacement Details.

The following estimated quantity is carried to the General Summary for this purpose:

202, Removal, Misc.: Sleeper Slab Removed .....**338 Sq Yd**

Item 202 – Guardrail Removed, As Per Plan

This item of work shall be used to carefully dismantle and remove all guardrail, terminal assemblies, posts and miscellaneous hardware as per CMS 202.09 at the locations specified in the plans.

All guardrail, terminal assemblies, posts and miscellaneous items listed below in good condition shall remain the property of the State and shall be salvaged for reuse. The following materials shall be salvaged, as directed by the Engineer:

Type 5 guardrail panels
Plastic guardrail blockouts
Steel posts
Type E end terminals – all parts except hardware
Flared and/or Rounded end sections

All other material not specifically listed above including damaged guardrail components and misc. hardware shall be disposed of by the Contractor.

Items designated for salvage shall be delivered by the Contractor to:

ODOT – Warrensville Garage
25609 Emery Rd.
Warrensville Hts., OH 44128
Location: SR 175 at the intersection of I-271 and Emery Rd
Attn: Bob Wisniewski or Nicky Chielo
Office: (216) 584-2285

Provide a minimum one week notice to the designated ODOT Maintenance contact to coordinate/schedule delivery.

Payment for the above item of work shall be included in the Unit Price Bid for Item 202-Guardrail Removed, As Per Plan.

Item 209 – Reshaping Under Guardrail, As Per Plan

This item of work shall be used to prepare proposed and existing guardrail runs for paving under guardrail, including the removal and disposal of existing asphalt under guardrail.

A sawcut will be performed, when applicable, to assist in the removal of existing asphalt under guardrail and minimize damage to the existing shoulder asphalt. Payment for sawcutting shall be included in the unit bid price for Item 209 – Reshaping Under Guardrail, As Per Plan.

Fill all holes remaining after removal of guardrail posts and anchor assemblies with granular material. Do not use fill material containing sod. All fill material shall be approved by the Engineer and shall be compacted as directed by the Engineer. Payment for the above is included in the applicable guardrail item.

Reshape and compact subgrade to ensure positive drainage. Establish a cross-slope of 0.042 (half inch per foot). Grade to a maximum width of 6 feet to provide positive drainage away from the travel lanes.

All collected debris and topsoil shall be removed and disposed of as specified in Section 105.17 of the CMS.

In areas where both the existing guardrail and the existing asphalt under guardrail will not be replaced, the removed material shall be replaced with compactable granular material conforming to 703.16 and placed to grade as approved by the Engineer. Seed and mulch these areas according to 659.

Payment for the above work shall be made at the unit bid price for Item 209 – Reshaping Under Guardrail, As Per Plan and shall include all labor, tools, equipment, materials, and incidentals necessary to perform the work.

Item 448 – Asphalt Concrete Intermediate Course, Type 1, Under Guardrail, PG-64-22, As Per Plan

This operation shall include paving under the guardrail using 448 Asphalt Concrete Intermediate Course, Type 1, PG64-22, Under Guardrail, As Per Plan.

Paving under guardrail shall consist of placing Item 448 to the depth specified using one of the following methods:

Method A:
1. Set guardrail posts
2. Place Item 448

Method B:
1. Place Item 448
2. Bore asphalt at post locations (may be omitted if steel posts are used)
3. Set guardrail posts
4. Patch around posts. The materials used for patching shall be an asphalt concrete approved by the Engineer. Patched areas shall be compacted using either hand or mechanical methods. Finished surfaces shall be smooth and sloped to drain away from the posts.

All equipment, materials and labor required to perform the work outlined above, with the exception of setting guardrail posts, shall be included for payment under Item 448, Asphalt Concrete, Intermediate Course, Type 1, PG 64-22, Under Guardrail, As Per Plan.

Item 606 – Anchor Assembly, MGS Type E

This item shall consist of furnishing and installing any of the guardrail end terminals listed on Roadway Engineering's web page under Roadside Safety Devices for Approved Guardrail End Treatments. Installation shall be at the locations specified in the plans, in accordance with the manufacturer's specifications.

The face of the Type E impact head shall be covered with a sheet of Type G reflective sheeting per CMS 730.19.

Refer to the manufacturer's instructions regarding the installation of, and the grading around the foundation tubes and ground strut. The top of any foundation tube should be less than 4 inches above the ground. The placement of the foundation tubes should be an appropriate depth below the level line in order to maintain the finished guardrail height of 31 inches from the edge of the shoulder.

On-site grading is required if the foundation tubes or top of the ground strut does project more than 4inches above the ground line.

Payment for the above work shall be made at the unit bid price for Item 606 – Anchor Assembly, MGS Type E, Each, and shall include all labor, tools, equipment and materials necessary to construct a complete and functional anchor assembly system, including all related transitions, reflective sheeting, hardware, grading, embankment and excavation not separately specified, as required by the manufacturer.

Environmental

Contractor's Work and Storage of Equipment

Work or storage of equipment or materials below the Ordinary High Water Mark of the Aurora Branch of the Chagrin River or McFarland Creek is not permitted.

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GENERAL NOTES

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Pavement

Profile and Alignment

Place the proposed pavement to follow the alignment and profile of the existing pavement. Previous construction plans showing the original alignment and profile, are available for inspection at the ODOT District 12 Office. Place the proposed asphalt concrete overlay as shown on the typical sections.

Part-Width Construction

Because of the necessity to build this project under traffic and to construct the full depth pavement in stages, exercise care to prevent the construction of a transverse butt joint in the asphalt courses. Lap longitudinal joints as shown on Standard Construction Drawing BP-3.1.

Planed Surfaces

The duration of time between milling and placement of the intermediate course shall be no longer than ten (10) days. The time limit shall begin on the first day of planing, and shall continue based on calendar days, minus any weather days, until completion of the asphalt concrete intermediate course.

Asphalt Concrete Surface Course Sealing Requirements

In addition to the gutter sealing requirements specified in SCD BP-3.1 and C&MS 401.15, after completion of the surface course, the Contractor shall use a certified 702.01 PG binder to seal the following locations:

- All castings including but not limited to monuments, manholes, water valves, catch basins, curb inlets.
- Butt joints and feather joints including bridge approaches.
- Forward joint for driveway asphalt and trailing joint when butting to existing asphalt drive.
- Perimeter of all pavement repairs or other asphalt inlays when pavement repairs/inlays are not overlaid with an asphalt concrete surface course.
- All cold longitudinal joints between paved shoulders and guardrail asphalt.

The material used shall be a certified 702.01 PG binder. The width of the sealer shall be 2-3 inches.

Any additional costs associated with the work identified in this note shall be included in the appropriate asphalt concrete surface course item of work.

Longitudinal Joints (Flexible Pavement)

Locate longitudinal joints in the surface course subject to the following requirements:

- Place the mainline pavement surface course with a single cold longitudinal joint located along the lane line. No other cold joints are permitted in the surface course of the mainline pavement.
- If part-width construction is used for the ramps, place the ramp surface course with a single cold longitudinal joint located near the middle of the ramp's total width.
- At speed change lanes at ramp merge and diverge areas, place surface course on speed change lanes within the same work day as adjacent mainline pavement.

Item 251 Partial Depth Pavement Repair, As Per Plan A

This item shall be used for the repair of unsound, cold patch, or pop-out areas of longitudinal joints consisting of existing asphalt or concrete as directed by the Engineer. The depth of the repair from the top of the existing surface shall be 3". The width of the repair shall be 24" centered over the existing joint.

The following estimated quantity is carried to the General Summary to complete this item of work:

251, Partial Depth Pavement Repair, As Per Plan A .....**1,000 Sq Yds**

Item 251 Partial Depth Pavement Repair, As Per Plan B

This item shall be used for the repair of unsound, cold patch, or pop-out areas of transverse joints consisting of existing asphalt or concrete as directed by the Engineer. The depth of the repair from the top of the existing surface shall be 3". The width of the repair shall be 24" centered over the existing joint.

The following estimated quantity is carried to the General Summary to complete this item of work:

251, Partial Depth Pavement Repair, As Per Plan B .....**9,200 Sq Yds**

Item 252 Full Depth Pavement Sawing
Item 301 Asphalt Concrete Base, PG 64-22

Use these items for the removal and replacement of 50' of existing composite pavement adjacent to the approach slabs of the Bridge over Solon Rd., the Abandoned Railroad, Liberty Rd., Chagrin River, McFarland Creek, and SR-306 as detailed in the Pavement Replacement Details and as determined by the Engineer. Make repairs at both the forward and rear approach pavement in both directions (EB & WB) at the locations given above.

Use replacement asphalt materials conforming to the requirements of 301.

Quantities for Item 202 Pavement Removed and Item 301 Asphalt Concrete Base, PG 64-22 are as given in the Pavement Subsummary.

The following estimated quantity for Item 252 Full Depth Pavement Sawing is carried to the General Summary to complete this item of work as described above and in the Pavement Replacement Details:

252, Full Depth Pavement Sawing .....**5,604 Feet**

Item 442 – Asphalt Concrete Surface Course, 12.5mm, Type A (446), As Per Plan

The coarse virgin aggregate for this item shall be limited to a blend of air cooled blast furnace slag (ACBFS) or Trap Rock from Ontario and limestone. The Contractor shall use a minimum 60% of ACBFS or Trap Rock from Ontario with limestone comprising the remaining percentage.

When ACBFS is used for a fraction of the aggregate, all requirements of C&MS 442 apply, except provide a total asphalt binder content greater than or equal to 6.2 percent. If ACBFS makes up 100% of the coarse aggregate, all requirements of C&MS 442 apply.

Use a PG 76-22M binder for this item.

Item 617 – Compacted Aggregate, As Per Plan

This item shall be used to place compacted aggregate at a variable depth only where needed to fill in low spots along the shoulder and eliminate drop offs. Material shall be limited to reclaimed asphalt concrete pavement.

The actual depth of compacted aggregated placed will vary depending upon existing conditions. For estimating purposes, an average depth of one inch (1") has been used. Water, if needed, shall be applied as per 617.05 and included under Item 617 – Compacted Aggregate, As Per Plan.

Item 618 – Rumble Strips, (Asphalt Concrete)

The following estimated quantity has been carried to the General Summary and shall be used to construct Item 618 Rumble Strips (Asphalt Concrete) per Standard Construction Drawing BP-9.1:

618, Rumble Strips, (Asphalt Concrete).....**22 Mile**

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GENERAL NOTES

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Pavement (Cont.)

Item Special – Tack Coat, Trackless Tack
Item Special – Tack Coat, Trackless Tack for Intermediate Course

Description: This work consists of preparing and treating a paved surface with NTSS-1HM Trackless Tack produced by Blacklidge Emulsions, Inc. Meet all requirements of Construction and Material Specifications Item 407 Tack Coat except as noted below.

Material: Conform to the following typical physical properties:

Parameter	Test Method	MIN.	MAX.
Saybolt Furol Viscosity, SFS @ 25°C	ASTM D88	15	100
Storage Stability, 24 hrs, %	ASTM D244	--	1
Storage Stability, 5 days, %	ASTM D244	--	5
Residue by Distillation, %	ASTM D244	50	--
Oil Distillate, %	ASTM D244	--	1
Sieve Test, %	ASTM D244	--	0.3
Test on Residue:			
Penetration, @ 25°C,	ASTM D5	--	20
Softening Point Range Deg C	ASTM D36	65	--
Solubility,%	ASTM D2042	97.5	--
Original Binder DSR@82°C			
G*/SIN δ,10 rad/sec	AASHTO T111	1	--

Note: Product should not contain filler such as clay, etc
Keep from freezing.
Supply certified test data to the Engineer showing the material supplied was tested for and meets the above properties.

Equipment. All requirements of 407.03 apply. See manufacturer's representative for correct distributor settings. Thoroughly clean all equipment if cationic emulsion was previously used.

Weather Limitations. All requirements of 407.04 apply.

Preparation of Surface. All requirements of 407.05 apply.

Application of Asphalt Material. Uniformly apply the asphalt material with a distributor per the requirements of 407.06 except as noted.

Dilution is not allowed.

If product is stored for an extended period of time, prior to application, agitate or gently circulate the material.

All nozzles and spray patterns shall be identical to one another along the distributor spray bar. The angle of the nozzle should a 15 to 30 degree angle to the spray bar axis to maximize overlap or as recommended by the nozzle manufacturer. Contact the manufacturer's representative for required spray nozzle size, and distributor and nozzle settings.

Apply at a rate of 0.04 to 0.08 gallons per square yard. Recommended application temperature is 160°F to 180° F. Do not exceed 180°F.

The Engineer and manufacturer's representative will approve rate of application, temperature, distributor settings, and areas to be treated before application of the tack coat. The Engineer will determine the actual application in gallons per square yard by a check on the project.

The application is considered satisfactory when the material is applied uniformly with no visible evidence of streaking or ridging and the application rate is ±10% of the specified rate.

Method of Measurement. All requirements of 407.07 apply.

Basis of Payment. The Department will not pay for non-uniformly applied materials as defined in 407.06.

The Department will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
Special	Gallon (Liter)	Tack Coat, Trackless Tack
Special	Gallon (Liter)	Tack Coat, Trackless Tack for Intermediate Course

Abandonment of Existing Roadway Pavement Sensor

The Project Engineer shall contact the Roadway Services Engineer (216-584-2190) five (5) working days in advance of any work (planing, pavement repairs or paving) taking place at the location of the existing roadway pavement sensor. This notice will provide the Department sufficient time to disconnect the appropriate cables to de-energize the existing pavement sensor.

The existing pavement sensor can be abandoned in place, removed as part of a pavement repair or removed during planing operations as indicated in the plans or as directed by the Project Engineer.

There are no additional costs related to the abandonment of the existing pavement sensor. Removal effort and cost as part of a pavement repair or planing operations will be incidental to that item of work.

Item Special – Misc.: Roadway Mounted Pavement Sensor, Furnished and Installed

This item shall include the furnishing and installation of one (1) Roadway Mounted Pavement Sensor: G10WX Complete Sensor – 915 MHz – 3 Temperature Probes, Lid, External Pavement and Subgrade; Part No. 12120007-IN.

The Project Engineer shall contact the Roadway Services Engineer (216-584-2190) five (5) working days prior to the installation of the new pavement sensor. This notice will provide the Department sufficient time to mark the exact location for the new sensor.

Maintenance of traffic for pavement sensor installation shall be done in accordance with the requirements of this plan, Item 614 – Maintaining Traffic and the OMUTCD.

All materials and installation methods shall conform to the manufacturer specifications. The pavement sensors are manufactured by Nu-Metrics which is part of Vaisala. The Distributor for these sensors in Ohio is M.H. Corbin Inc., 8420 Estates Court, Plain City, OH 43064 (800-380-1718 or 614-873-5216).

Item Special – Misc.: Roadway Mounted Pavement Sensor,
Furnished and Installed..... **1 Each**

Item Special – Misc.: Weather Station and Roadway Mounted Pavement Sensor Commissioning

This item shall be used to test and calibrate the existing weather station (RPU) and the new roadway mounted pavement sensor to insure all components are properly installed, functional, communicate wirelessly as designed and operate in accordance with the manufacturer's specifications.

Item Special – Misc.: Weather Station and Roadway Mounted Pavement
Sensor Commissioning..... **1 Each**

Traffic Control

ODOT Automatic Traffic Recorder Site

The Contractor is advised that automatic traffic recording (ATR) site #591 is located near Sta. 2081+00 +/- on US-422 between Liberty Rd. and the bridge over the Chagrin River.

The ODOT Project Engineer shall contact the Office of Technical Services, attention Lindsey Pflum, Phone (614) 752-4057, prior to pavement operations and upon completion of the overlay. The Department will restore operation of the ATR site.

Raised Pavement Markers

Raised pavement marker spacing shall be 80 feet.

Item 620 Removal of Delineator

The removal and disposal quantity of delineators is 75% of the replacement quantity based on the fact that some of the existing delineators are missing.

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GENERAL NOTES

CUY/GEA-422-18.31/0.00

Maintenance of Traffic

Item 614 - Maintaining Traffic

General

It is the responsibility of the Contractor to provide through vehicular access in both directions at all times throughout the project area. The project shall be constructed in phases in order to minimize traffic disruption and inconvenience to the general public. The Contractor shall be responsible for providing all equipment, materials, and manpower needed to adequately maintain traffic as provided for in the plans and specifications.

The Contractor is reminded that, in the conduct of this project, the sequence of operations shall be planned in a fashion which minimizes the number of lane reductions and/or lane width reductions required to maintain traffic through the project.

Permitted lane closures shall be as shown in the "Schedule of Through Lanes to be Maintained" note.

Construction Sequence

No permanent maintenance of traffic zones are detailed in these plans. Traffic shall be maintained in accordance to the "Schedule of Through Lanes to be Maintained" note. All work zone closures shall comply with the appropriate Standard Drawings.

Prior to opening all lanes to normal traffic, the Contractor shall ensure that the pavement is in a drivable condition with no potholes or dust and that all longitudinal drop-offs greater than 1-1/2" and transverse drop-offs are ramped as per the "Maintaining Traffic and Sequence of Operations" note.

All costs associated with the set up and take down of the maintenance of traffic zones including all labor, equipment, signs, drums and flashing arrow board shall be included in the lump sum bid for Item 614, Maintaining Traffic.

Maintenance of Traffic Control Zones

The Contractor shall be responsible to maintain the signs, drums or cones specified in the Standard Construction Drawings. When the Contractor is notified of deficiencies he shall correct the deficiencies as soon as possible.

Construction Traffic

All construction traffic shall use acceptable truck routes to access the construction area. Use of local residential streets is strictly prohibited unless allowed in writing by the local enforcement authority.

Surface Condition Signs

Erect a GROOVED PAVEMENT sign (W8-H15) 250 feet (75 m) in advance of any section of roadway where traffic must travel on a planed surface. Ensure these signs are in place before opening the roadway to traffic. Erect these signs on each entrance ramp and at intersections of through routes to warn traffic of this surface condition.

Payment shall be made under the lump sum contract price for Item 614, Maintaining Traffic.

Maintaining Traffic at All Times

A minimum of one lane of traffic in each direction shall be maintained at all times by use of the existing pavement and/or the completed pavement.

Lane Closure/Reduction Required

Length and duration of lane closures and restrictions shall be at the approval of the Engineer. It is the intent to minimize the impact to the traveling public. Lane closures or restrictions over segments of the project in which no work is anticipated within a reasonable time frame, as determined by the Engineer, shall not be permitted. The level of utilization of maintenance of traffic devices shall be commensurate with the work in progress.

Lanes Open During Holidays or Special Events

No work shall be performed and all existing lanes shall be open to traffic during the following designated holidays or events:

Christmas	Fourth of July
New Year's Day	Labor Day
Memorial Day	Thanksgiving

The period of time that the lanes are to be open depends on the day of the week on which the holiday or event falls. The following schedule shall be used to determine this period:

Day of holiday or event	Time all lanes must be open to traffic
Sunday	12:00N Friday through 6:00 AM Monday
Monday	12:00N Friday through 6:00 AM Tuesday
Tuesday	12:00N Monday through 6:00 AM Wednesday
Wednesday	12:00N Tuesday through 6:00 AM Thursday
Thursday	12:00N Wednesday through 6:00 AM Friday
Thursday (Thanksgiving only)	12:00N Wednesday through 6:00 AM Monday
Friday	12:00N Thursday through 6:00 AM Monday
Saturday	12:00N Friday through 6:00 AM Monday

No extensions of time shall be granted for delays in material deliveries, unless such delays are industry-wide, or for labor strikes, unless such strikes are area-wide.

Should the Contractor fail to meet any of these requirements, the Contractor shall be assessed a disincentive in the amount of $50 for each minute the above described lane closure restrictions are violated.

Interim Completion Date – Pavement & Traffic Control

September 15, 2015 constitutes an interim completion date for all pavement and traffic control work up to and including the surface course from Sta. 952+53.31 to Sta. 2230+00. Complete all items of pavement work and the permanent pavement markings and raised pavement markers (RPMs), necessary to open the proposed pavement to traffic.

Winter Time Limitations

All existing lanes shall be open to traffic between November 1 and April 1. November 1 shall be considered to constitute an interim completion date and liquidated damages shall be assessed in accordance with C&MS 108.07 for each calendar day that all lanes are not open and available to traffic.

Major Work Items

The following major work items will require traffic maintenance which shall be incorporated into the Contractor's sequence of operations:

A. Removal of existing RPM's
B. Plane asphalt concrete
C. Perform pavement repairs
D. Place asphalt concrete intermediate course
E. Place asphalt concrete surface course
F. Place proposed pavement markings and raised pavement markers
G. Remove existing guardrail & place proposed guardrail

Suspension of Work

If the Contractor fails to comply with the provisions for traffic control as set forth in these plans or with provisions of the Ohio Manual Of Uniform Traffic Control Devices, the Engineer shall suspend work until the Contractor complies with the necessary requirements.

The Contractor shall be responsible for any damage to median turn-arounds located within the project limits. Any damage caused by the Contractor's actions shall be repaired at no cost to the State.

Contractor's Equipment - Operation and Storage

Vehicles and equipment shall always move with, and not across or against the flow of traffic. Vehicles and other equipment shall not park or stop except within designated work areas; and shall not enter and leave work areas in a manner which will be hazardous to, or interfere with the normal traffic flow. Personal vehicles will not be permitted to park within the Right-of-Way except in specific areas designated by the Engineer.

Equipment, vehicles and materials shall not be stored or parked within 30 feet of the traveled way unless 6 feet behind PCB or guardrail.

All work vehicles and equipment that enters the work zone more than once a day must be equipped with at least one flashing, rotating, or oscillating amber light that is visible in all directions of traffic for at least one quarter of a mile, day or night.

Truck Mounted Attenuator

When the Contractor is setting short term work zones and the shoulders (right or left shoulder) are less than 10 feet in width and are on a road with speeds 45 mph or higher, a Truck Mounted Attenuator (TMA) must trail the operation of setting the advance warning signs up or taking them down. This same truck must have a Type B flashing arrow panel mounted on it facing the rear of the truck.

The TMA must bring a vehicle weighing 1800 to 4500 pounds to a safe, controlled stop, per NCHRP 350 TL-3 criteria. The manufacturer's specification must be followed concerning the size of the truck and the connections to the TMA.

Payment

All work and traffic control devices shall be in accordance with C&MS 614 and other applicable portions of the specifications, as well as the Ohio Manual of Uniform Traffic Control Devices. Payment for all labor, equipment, and materials shall be included in the lump sum contract price for Item 614, Maintaining Traffic, unless separately itemized in the plan.

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MAINTENANCE OF TRAFFIC GENERAL NOTES

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Maintaining Traffic – General Provisions

1. Traffic shall be maintained in accordance with the "Schedule of Through Lanes to be Maintained." The Contractor shall set up and operate his equipment in such a manner as to minimize encroachment upon the traveled width of pavement.

2. The Contractor shall notify the Engineer, the responsible law enforcement agency and the Ohio Department Of Transportation, District 12 Public Information Officer ((216) 584-2007) not less than 24 hours prior to a scheduled disruption of traffic.

3. Nighttime work shall be permitted in accordance with these plans and notes. The Contractor shall provide flood lighting of the work area in accordance to 401.15 of the Construction and Material Specifications in order to assure the safest conditions during nighttime work. A lighting plan for nighttime operations shall be presented to and approved by the Engineer.

4. The Contractor shall furnish, erect and maintain all warning and information signs necessary for maintaining traffic. The sign faces shall be reflectorized with type G sheeting complying with the requirements of CMS 730.19. The Contractor shall determine what signs are needed and advise the Engineer two (2) weeks in advance of his detailed plans. See the OMUTCD and standard drawings for the minimum signage required."

5. Traffic control devices shall be set up prior to the start of construction, and shall be properly maintained during the time special conditions exist. They shall remain in place only as long as they are needed and shall be immediately removed thereafter. Where operations are performed in stages, there shall be in place only those devices that apply to the condition present during stage in progress. All signs with messages which do not apply during a certain period shall be covered or set aside out of the view of traffic.

6. Placement of final roadway pavement markings and raised pavement markers shall be accomplished in accordance with the "Schedule of Through Lanes to be Maintained." The Contractor shall provide 2 shadow vehicles as per MT-99.20 following the pavement marking equipment. The shadow vehicles shall travel 500' apart with the remote vehicle traveling on the shoulder (left or right as applicable) where usable shoulder is available. The first shadow vehicle in a traffic lane shall be equipped with a truck mounted attenuator meeting NCHRP 350 requirements. Each shadow vehicle shall have a yellow flashing beacon plus 48" construction warning signs mounted on the back facing traffic with standard type messages advising motorists of the work ahead, advisory warning speed, and which lane is closed.

7. During non-working periods, open excavations shall be delineated with warning flashers and/or other approved devices as deemed appropriate by the Engineer.

8. Existing signs located within the road work areas which are necessary for interim or permanent traffic control shall be removed and re-erected in locations as approved by the Engineer.

9. No stoppage of traffic shall occur without law enforcement personnel at each location to direct traffic.

10. Whenever a total closure is implemented, the Contractor shall provide a portable changeable message sign, type from ODOT's pre-approved list. It shall be placed 1.5 miles to 2 miles in advance of the closure or as directed by the Engineer.

11. For any operation not specifically mentioned in these plans, the traffic shall be maintained in accordance with the OMUTCD.

Maintaining Traffic and Sequence of Operations

All proposed items from Station 952+53.31+/- to Station 2230+00, up to and including the surface course, guardrail, pavement markings, and raised pavement markers (RPMs), shall be completed prior to September 15, 2015.

The Contractor shall complete all proposed items from Station 2230+00 to Station 2273+50+/-, including Ramps A, B, C, & D, during the 2016 construction season prior to the project completion date. This constraint is imposed so as to reduce conflicts between this project and Construction Project 130521.

All asphalt concrete operations shall be conducted in a manner that will assure minimum danger and inconvenience to the highway users. All work shall be performed at the times provided in the "Schedule of Through Lanes to be Maintained." The procedure for the removal or placement of any existing or proposed asphalt course shall be such that no greater than 1-1/2" discontinuity in the elevation of the traveled surface shall be exposed to traffic.

Traffic shall not be permitted to cross any partial-width removal or resurfacing joint except as necessary during the actual removal or paving operation. Any partial-width longitudinal joints, with a discontinuity greater than 1-1/2", which must be exposed to traffic shall be ramped using Item 614 Asphalt Concrete For Maintaining Traffic at a rate not steeper than 6:1.

Temporary transverse removal or paving joints which must be exposed to traffic shall be ramped using Item 614 Asphalt Concrete for Maintaining Traffic at a rate not to exceed 1" in 10'.

For removal of existing overlays, a transition may be planed into the existing overlay and may be substituted for the asphalt ramps previously described.

Whenever traffic is subject to partial width removals or overlays prior to full width completion, the Contractor shall provide W8-11-48 signs (dual sign installation). Placement shall be as directed by the Engineer and included in the Lump Sum bid for Item 614 Maintaining Traffic.

Whenever any part of the traveled surface is closed, the motorists shall be warned and diverted by the Contractor through the use of a flashing arrow, in addition to those provisions set forth in the Ohio Manual of Uniform Traffic Control Devices.

Item 630 – Specific Service and Tourist-Oriented Directional Signs Removal and Reinstallation

In the event that this project necessitates the removal of any Specific Service (logo) signs and/or Tourist-Oriented Directional Signs (TODS) that are not specifically described in other items of work, the Contractor shall carefully remove such signs. Removed logo signs and TODS shall be immediately re-erected on approved temporary supports in the same general vicinity along the roadway to be viewed by the motoring public. Unless original supports will be reused, the Contractor shall remove and dispose of the supports and foundations in accordance with Item 630.12. The Contractor shall notify Ohio Logos, Inc. at (800) 860-5646 at least 60 days prior to the project completion to alert them that one or more logo signs and/or TODS are on temporary supports. Ohio Logos, Inc. will make arrangements to have the signs installed on permanent supports at the completion of the project.

This item of work includes removal and temporary re-erection of logo signs and TODS, furnishing and installing of temporary supports, removal and disposal of the original supports and foundations, and providing notification to Ohio Logos, Inc. This work will be included in the lump sum payment for Item 614, Maintaining Traffic.

Item 630 Signing Misc.: Additional Signs, Ground Mounted, As Directed By The Engineer

When additional signing is needed to maintain traffic, the Contractor shall furnish the sign or signs as directed by the Engineer. These signs shall be ground mounted and meet all the specifications of the plan, proposal and the current year CMS.

Payment for this item shall include but not be limited to the cost to furnish and erect the sign, including drive posts or other approved methods of support, maintaining the sign and removal of the sign.

This item of work shall be used to provide signs that are beyond the requirements of the signage that is detailed in the Standard Drawings and the OMUTCD.

The following quantity shall be carried to the General Summary:

630, Signing Misc.: Additional Signs, Ground Mounted,
As Directed By The Engineer..... **300 Sq. Ft.**

Item 614 Asphalt Concrete for Maintaining Traffic

This item shall be used to install and remove temporary asphalt ramps for transverse discontinuities. Ramping shall be placed at the rate of 1" per 10 ft. or to be used as determined by the Engineer.

Material shall be removed prior to the placement of the next course of asphalt.

The following estimated quantity is carried to the general summary to accomplish this item of work.

614, Asphalt Concrete for Maintaining Traffic..... **250 Cu Yd**

Work Zone Pavement Markings

Place Work Zone Edge Line and Work Zone Lane Line at 6" widths. Place Work Zone Channelizing Line and Work Zone Dotted Line at 12" widths. All other marking dimensions shall be as given in 614 or 641.

The following estimated quantities have been carried to the general summary, to be used as directed by the Engineer, to place work zone pavement markings after the Contractor has planed the existing asphalt, placed the intermediate course and after the surface course has been placed.

614, Work Zone Lane Line, Class I, 642 Paint, As Per Plan (6") ..... **32.43 Mile**

614, Work Zone Edge Line, Class I, 642 Paint, As Per Plan (6") ..... **69.18 Mile**

614, Work Zone Channelizing Line, Class I, 642 Paint, As Per Plan (12") ..... **8,421 Feet**

614, Work Zone Dotted Line, Class I, 642 Paint, As Per Plan (12") .. **7,194 Feet**

614, Work Zone Stop Line, Class I, 642 Paint ..... **138 Feet**

614, Work Zone Arrow, Class I, 642 Paint..... **18 Each**

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MAINTENANCE OF TRAFFIC GENERAL NOTES

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Item 614 Law Enforcement Officer (With Patrol Car) For Assistance During Construction Operations

Use of Law Enforcement Officers (LEOs) by contractors other than the uses specified below will not be permitted at project cost. LEOs should not be used where the OMUTCD intends that flaggers be used.
In addition to the requirements of CMS 614 and the OMUTCD, a uniformed LEO with an official patrol car (car with top-mounted emergency flashing lights and complete markings of the appropriate law enforcement agency) shall be provided for the following traffic control tasks:

- During the entire advance preparation and closure sequence where complete blockage of traffic is required.

- During a traffic signal installation when impacting the normal function of the signal or the flow of traffic or when traffic needs to be directed through an energized traffic signal contrary to the signal display (e.g., directing motorists through a red light).

In addition to the requirement of CMS 614 and the OMUTCD, a uniformed LEO with an official patrol car (car with top-mounted emergency flashing lights and complete markings of the appropriate law enforcement agency) should be provided for the following traffic control tasks:

* For lane closures: during initial set-up periods, tear down periods, substantial shifts of a closure point or when new lane closure arrangements are initiated for long-term lane closures/shifts (for the first and last day of major changes in traffic control setup). In general, LEOs should be positioned at the point of lane restriction or road closure and to manually control traffic movements through intersections in work zones.

* When construction vehicles are entering/exiting the zone directly from/into an open lane of traffic. If a lane has been closed to provide an acceleration/deceleration lane for the vehicle, the LEO will not be required.

LEOs should not forgo their traffic control responsibilities to apprehend motorists for routine traffic violations. However, if a motorist's actions are considered to be reckless, then pursuit of the motorist is appropriate.

The LEOs work at the direction of the Contractor. The Contractor is responsible for securing the services of the LEOs with the appropriate agencies and communicating the intentions of the plans with respect to duties of the LEOs. The Engineer shall have final control over the LEOs' duties and placement, and will resolve any issues that may arise between the two parties.

The LEO shall report in to the Contractor prior to the start of the shift, in order to receive instructions regarding specific work assignments during his/her shift. The LEO is expected to stay at the project site for the entire duration of his/her shift. The LEO shall report to the Contractor at the end of his/her shift. Once the LEO has completed the duties described above and still has time remaining on his/her shift, the LEO may be asked to patrol through the work zone (with flashing lights off) or be placed at a location to deter motorists from speeding. Should it be necessary to leave the project site, the LEO shall notify the Engineer. The Contractor shall provide the LEO with a two-way communication device which shall be returned to the Contractor at the end of his/her shift.

LEOs (with patrol car) required by the traffic maintenance tasks above shall be paid for on a unit price (hourly) basis under Item 614, Law Enforcement Officer (With Patrol Car) for Assistance. The following estimated quantities have been carried to the General Summary.

614, Law Enforcement Officer with Patrol Car for Assistance..... **600 Hours**

The hours paid shall include any minimum show-up time required by the law enforcement agency involved.

Any additional costs (administrative or otherwise) incurred by the Contractor to obtain the services of an LEO are included with the bid unit price for Item 614, Law Enforcement Officer with Patrol Car for Assistance.

Public Safety

The following provisions "A", "B", and "C" shall apply when the lane adjacent to the guardrail is open to traffic. The period of time that a hazard is left unprotected by the removal of guardrail shall be held to an absolute minimum. If, after one day, the entire run of guardrail construction is not complete, the following shall apply:

A. In areas where existing guardrail has been removed or the guardrail is in a partial stage of completion, the contractor shall provide and maintain Type II barricades with Type C (steady burning) warning lights within the limits of the unprotected area. The barricades shall be placed at 50' intervals and offset at least 2' from the edge of the traveled roadway and in close proximity to the construction. The approach end of a partially completed run of guardrail shall be fastened at ground level to a steel drum.

B. If the existing guardrail is for the protection of an obstacle (such as a sign support, bridge pier or bridge parapet), the contractor shall erect portable concrete barrier in the direction of traffic. The requirements of paragraph "A" shall apply to the remaining guardrail within the run. Temporary barrier shall be flared at a 17:1 (minimum) taper rate and shall terminate outside the clear zone, behind existing guardrail or barrier or with a work zone impact attenuator.

C. The requirements stated in "A" shall apply for a period not to exceed one week. Where the rebuilding or construction of any run of guardrail cannot be accomplished within one week, the contractor shall provide and maintain temporary concrete barrier in the interim time it takes to complete the work. The approach end of the portable concrete barrier shall be flared to the outer edge of the paved shoulder and shall terminate outside the clear zone, behind existing guardrail or barrier or with a work zone impact attenuator. In addition, a Type II barricade with Type B (high intensity flasher) warning light shall be placed in front of this initial section of temporary barriers to provide forewarning to the approaching traffic.

The term "guardrail" as used herein shall be understood to cover all types of existing or proposed barrier, including standard guardrail, barrier design guardrail, bridge parapet, and concrete barrier.

The cost of complying with these safety procedures shall be included in the lump sum bid price for Item 614 Maintaining Traffic.

Item 614 Portable Changeable Message Signs, As Per Plan

The Contractor shall furnish, install, maintain and remove, when no longer needed, a changeable message sign. The sign shall be of a type shown on a list of approved PCMS units available on the Office of Materials Management web page. The list contains Class A and B units with minimum legibility distances of 650 feet and 475 feet, respectively.

Each sign shall be trailer-mounted and equipped with a functional dimming mechanism, to dim the sign during darkness, and a tamper and vandal proof enclosure. Each sign shall be provided with appropriate training and operation instructions to enable on-site personnel to operate and troubleshoot the unit. The sign shall also be capable of being powered by an electrical service drop from a local utility company. The PCMS shall be delineated in accordance with C&MS 614.03.

Placement, operation, maintenance and all activation of the signs by the Contractor shall be as directed by the Engineer. The PCMS shall be located in a highly visible position yet protected from traffic. The Contractor shall, at the direction of the Engineer, relocate the PCMS to improve visibility or accommodate changed conditions. When not in use, the PCMS shall be turned off. Additionally, when not in use for extended periods of time, the PCMS shall be turned away from all traffic.

The Engineer shall be provided access to each sign unit and shall be provided with appropriate training and operation instructions to enable ODOT personnel to operate and troubleshoot the unit, and to revise sign messages, if necessary.

All messages to be displayed on the sign will be provided by the Engineer. A list of all required pre-programmed messages will be given to the Contractor at the project preconstruction conference. The sign shall have the capability to store up to 99 messages. Message memory or pre-programmed displays shall not be lost as a result of power failures to the on-board computer. The sign legend shall be capable of being changed in the field. Three-line presentation formats with up to six message phases shall be supported. PCMS format shall permit the complete message for each phase to be read at least twice.

The PCMS shall contain an accurate clock and programming logic which will allow the sign to be activated, deactivated or messages changed automatically at different times of the day for different days of the week.

The PCMS unit shall be maintained in good working order by the Contractor in accordance with the provisions of C&MS 614.07. The Contractor shall, prior to activating the unit, make arrangements, with an authorized service agent for the PCMS, to assure prompt service in the event of failure. Any failure shall not result in the sign being out of service for more than 12 hours, including weekends. Failure to comply may result in an order to stop work and open all traffic lanes and/or in the Department taking appropriate action to safely control traffic. The entire cost to control traffic, accrued by the Department due to the Contractor's noncompliance, will be deducted from moneys due, or to become due the Contractor on his contract.

The Contractor shall be responsible for 24-hour-per-day operation and maintenance of these signs on the project for the duration of the phases when the plan requires their use.

The plan quantity below is based on a total of four (4) PCMS units for duration of twelve (12) months each.

Payment for the above described item shall be at the contract unit price. Payment shall include all labor, materials, equipment, fuels, lubricating oils, software, hardware and incidentals to perform the above described work.

614, Portable Changeable Message Sign, As Per Plan ..... **48 Sign Month**

Floodlighting

Floodlighting of the work site for operations conducted during nighttime periods shall be accomplished so that the lights do not cause glare to the drivers on the roadway. To ensure the adequacy of the floodlight placement, the Contractor and the Engineer shall drive through the work site each night when the lighting is in place and operative prior to commencing any work. If glare is detected, the light placement and shielding shall be adjusted to the satisfaction of the Engineer before work proceeds.

Payment for all labor, equipment and materials shall be included in the lump sum contract price for Item 614, Maintaining Traffic.

Work Zone Traffic Supervisor

Subject to approval of the Engineer, the Contractor shall employ and identify (someone other than the superintendent) a certified Worksite Traffic Supervisor (WTS) before starting work in the field. The WTS shall be certified from one of the following organizations:

1. American Traffic Safety Service Association (ATSSA), phone number 1-800-272-8772, certified Traffic Control Supervisor (TCS).

2. National Highway Institute, Design and Operation of Work Zone Traffic Control, phone number 1-703-235-0528.

3. The Ohio Contractors Association, Traffic Control Supervisor (OCA/TCS) work zone class, only if taken after May 5, 2004, phone number 1-800-229-1388.

4. Ohio Laborers' Training, Traffic Control Supervisors Class, phone number 1-740-599-7915.

A copy of each WTSs certification and 24-hour contact information shall be provided to the Engineer at the preconstruction conference. If the designated WTS will not be available full time (24/7) the Contractor may designate an alternate WTS to be available when the primary is off duty. Each WTS shall have a current WTS certification (with an expiration date no more than 5 years from the date of issue) from any of the approved organizations.

The WTS position has the responsibility of monitoring traffic control deficiencies for the entire work zone. The duties of the WTS are as follows:

1. Be available on a 24-hour per day basis, and be able to be on site for all emergency traffic control needs within one hour of notification by police or project staff and be prepared to effect corrective measures immediately on existing work zone traffic control devices.

2. Attend preconstruction meeting and all project meetings where traffic control management is discussed.

3. Be available for meetings or discussions with the Engineer upon request or within 36 hours.

4. Coordinate a Traffic Incident Management meeting each year before construction work begins with ODOT and the Safety Forces that will respond to incidents on the project. Items to be discussed will be the:

    a. Traffic Incident Management Plan (TIMP);

    b. Emergency Response and Notification;

    c. Project work/phasing concerns (e.g., ramp closures); and

    d. Responders concerns.

5. Be aware of, and coordinate if necessary, all traffic control operations, including those of subcontractors and suppliers.

6. Coordinate project activities with all Law Enforcement Officers (LEOs). A WTS shall also be the main contact person with the LEOs while they are on the project.

7. Coordinate meetings with ODOT personnel, LEOs and other applicable entities before each plan phase switch to discuss work zone traffic control.

8. Ensure compliance with the contract documents for signs, barricades, temporary concrete barrier, pavement markings, portable message signs, and other traffic control devices on a daily basis; and facilitate any corrective action necessary.

9. Notify the Contractor of the need for cleaning and maintenance of all traffic control devices, including the covering and removal of inapplicable signs.

10. Inspect, evaluate, propose necessary modifications to, and document the effectiveness of, the traffic control devices and/or traffic operations on a DAILY BASIS (7 days a week). In addition, a weekly night inspection of the work zone setup for daytime work operations; and one daytime inspection per week for nighttime projects. This shall include (but not be limited to) documentation on the following project events:

    a. Initial traffic control setup (day and night review).

    b. Daily traffic control setup and removal.

    c. When construction staging causes a change in the traffic control setup.

    d. Crash occurrences within the construction area.

    e. Removal of traffic control devices at the end of a phase or project.

    f. All other emergency traffic control needs.

11. Complete the Department approved Long Term Inspection form (CA-D-8) after each inspection as required in # 10 and submit it to the Engineer the following work day. These reports shall include a checklist of all traffic control maintenance items to be reviewed. A copy of the form will be provided at the pre-construction meeting. Any deficiencies observed shall be noted, along with recommended corrective actions and the dates by which such corrections were, or will be, completed. A copy of this document can be found in the current revision of the Department of Transportation Construction Inspection Forms Manual.

12. Verify that all flagging operations are being conducted per the Ohio Manual of Uniform Traffic Control Devices.

13. Have copies of the ODOT Temporary Traffic Control Manual and applicable standards and specifications included in the contract documents available at all times on the project.

14. Identify and contact all possible response personnel; preplan and keep an updated roster with phone numbers:

    a. Federal, State, and local transportation agencies (Traffic Management Center);

    b. Regional, county or local 911 dispatch; and

    c. Towing and recovery providers.

15. Comply with the provisions of OMUTCD Chapter 6I, Control of Traffic Through Traffic Incident Management Areas.

16. Propose a response/action plan to:

    a. Establish alternate route plans per the provided ODOT Playbook;

    b. Remove traffic demand from impacted roadway(s);

    c. Divert traffic to routes that can accommodate demands;

    d. Detour traffic away from sensitive areas (such as schools, hospitals, etc.);

    e. Discuss methods of determining a staging area for responders within or near the construction zone; and

    f. Discuss methods of developing ingress and egress sites within the construction zone.

    The response/action plan shall be submitted to ODOT for acceptance before the Contractor's first day of work.

17. Perform, at a minimum, the following functions in incident detection and verification:

    a. Call 911/ notify Traffic Management Center and provide the following:

        i. Location – including milepost number and direction of travel.
        ii. Number and type of vehicles involved.
        iii. Estimated extent of damage or injury.
        iv. Estimated number of patients involved.
        v. Any potential hazardous conditions.
        vi. The placard number on any hazardous materials placard from a safe distance.

    b. Initiate traffic management / provide traffic control.

    c. Assist motorist with disabled vehicles.

    d. Recommend roadway repair needs.

    e. Provide repair resources.

18. Attend post-incident debriefings if required.

The Department will deduct the prorated daily amount of the unit price bid for the WTS for any day on which the Contractor fails to perform the duties set forth above. Should the Contractor's failure to perform any of the duties described above result in a maintenance of traffic safety issue, the Department will deduct the prorated daily amount for Item 614 Maintenance of Traffic from the Contractor's next scheduled estimate.

In addition to the plan requirements for Work Zone Traffic Supervisor, complete a Department-approved inspection form for each day a work zone speed zone is implemented. In the inspection report, note the disposition of all existing and work zone speed limit signing, including the actual times that the work zone speed limit signs were in place each day. Submit these daily inspection reports to the Engineer at least as often as the weekly inspection reports required in Item 10 of the Work Zone Traffic Supervisor plan note.

If three or more failures to perform the duties set forth above occur, the WTS shall be immediately removed from the work in accordance with C&MS 108.05.

The following estimated quantity has been included for the Worksite Traffic Supervisor:

614, Worksite Traffic Supervisor..... **15 Months**

CALCULATED | CHECKED

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY/GEA-422-18.31/0.00

LED Lights on Watch for Stopped Traffic Signs

These signs shall be used for the approach slab work, backwall work, and full depth pavement replacement work when lanes are closed outside the Permitted Lane Closure Schedule or when traffic has backed up during permitted times.

The following additional advance warning signs shall be used per Standard Construction Drawing MT-95.50. In addition to the requirements given in MT-95.50, the "Watch for Stopped Traffic " signs shall have 8 amber flashing LED lights that blink on and off during the time the sign is up. These signs are to be dual mounted.

The amber flashing LED light signs shall be one of the following companies, or an approved equal to be determined by the Engineer:

1. Blinker Signs manufactured by:

   Traffic and Parking Control Company, Inc. (TAPCO)
   5100 W. Brown Deer Rd.
   Brown Deer, WI 53223
   (800) 236-0112
   Website: http://www.tapconet.com/

2. Day-Viz ™ Blinker Signs manufactured by:

   Traffic Safety Supply Company, Inc.
   2324 S.E. Umatilla St.
   Portland, OR 97202
   (503) 235-8531
   Website: http://www.tssco.com/index.html

3. LED BlinkerSigns® manufactured by:

   Garden State Highway Products, Inc.
   1740 E. Oak Road
   Vineland, NJ 08361
   (800) 338-5685
   Website: http://www.gardenstatehwy.com/default.aspx

Signs shall be installed per the manufacturer's recommendations.

Payment shall be made at the lump sum unit price bid for Item 614 – Maintaining Traffic, and shall include all materials, labor, incidentals, and equipment necessary to install the flashing LED signs.

Road User Costs/Short Term Lane Closures

Short term lane closures are those which are permitted by the "Schedule Of Through Lanes To Be Maintained" table. Short term road user costs shall also be assessed when a ramp closure is violated.

These times shall not be revised without prior approval from the District 12 Work Zone Traffic Control Engineer.

If short term lane closures are in place outside the specified times, the Contractor will be assessed road user costs in the amount of $50 per each minute the lane remains closed.

Short term lane closures shall only be implemented when work is being continuously performed. The closure shall be removed as soon as possible after work has stopped.

Item 614 Maintaining Traffic – Work Zone Speed Zone Signs for Freeway Resurfacings

A Work Zone Speed Zone is an approved speed limit revision to be implemented on this project to enhance the safety of both workers and motorists within the limits of active work zones. Work Zone Speed Zones are temporary in nature and will be in effect only during the times which lane closures are in place.

Implementation of Work Zone Speed Zones is required for all operations requiring the closure of one or more lanes to perform items of work detailed in the plans, except for lane closures needed to install pavement markings and raised pavement markers.

The District Speed Zone Coordinator will retain the official Work Zone Speed Limit Revision and justification report. The Project Engineer will retain all records furnished by the Worksite Traffic Supervisor indicating what signs were in place on every day that Work Zone Speed Zones were in place.

Furnish, install, maintain, cover during suspension of work, and subsequently remove Work Zone Speed Limit (R2-1) (50 mph speed limit) signs and supports within the work limits in accordance with the following requirements:

Cover or remove any existing speed limit signs within active work zone speed zones. Restore existing speed limit signs once lane closures are no longer in place.

Erect or uncover Work Zone Speed Limit signs no more than one hour before the start of work requiring lane closures. Remove or cover Speed Reduction and Work Zone Speed Limit signs and restore existing speed limit signs no later than one hour once lane closures are no longer in place.

Erect Speed Reduction (Speed Zone Ahead symbol) signs (W3-5) approximately 1250' in advance of the first Work Zone Speed Limit signs. Provide a dual installation where inside shoulder is 4' or greater.

Erect the first Work Zone Speed Limit signs approximately 500' in advance of a lane closure as depicted in SCD MT-95.30. Provide a dual installation where inside shoulder is greater than 5'. Repeat Work Zone Speed Limit signs every 1 mile for 60 and 55 mph zones and every one-half mile for 50 mph and 45 mph zones. Erect a Work Zone Speed Limit sign immediately after each open entrance ramp within the zone.

Erect signs indicating the resumption of the statutory speed limit at the end of the lane closure. Provide a dual installation. The Contractor may use signs and supports in used, but good condition, provided the signs meet current ODOT specifications. Sign faces shall be retro-reflectorized with Type G sheeting complying with the requirements of CMS 730.19.

Mount Work Zone Speed Limit signs on two No. 3 posts in accordance with Item 630, unless mounted on a temporary sign support per SCD MT 105.10.

Observe all requirements of the OMUTCD for Work Zone speed limit and related sign sizes, placement, supports, etc with two exceptions: 1) expressway size speed limit signs may be used on freeways and expressways, if necessary; 2) the height of signs mounted on portable supports should be the height required for ground-mounted signs but shall not be more than 1 foot lower than the height required by the OMUTCD, or as directed by the Engineer. Portable supports should not be used for more than 3 consecutive days.

Provide Work Zone Speed Limit signs and supports and cover, remove, and restore existing Speed Limit or Minimum Speed Limit signs incidental to Item 614 Maintaining Traffic.

The following table provides details on work zone speed zones approved for use on this project.

WZSZ Revision Number	County & Route	SLM		Phase/ Part & Direction	Approved Speed Limit (mph)	Specific Warranting Conditions and Factors
		From	To			
WZ-65160	CUY/ GEA-422	Varies[A]	Varies[A]	All	55 MPH	Lane closures necessary to improve highway.

[A]The begin and end point of the WZSZ will vary within the project limits based on where lane reductions are in place to perform work required by the plans.

Item 614 Work Zone Increased Penalties Sign

R11-H5A-48 signs shall be furnished, erected, and maintained in good condition and/or replaced as necessary and subsequently removed by the Contractor. Signs shall be mounted at the appropriate offsets and elevations as prescribed by the Ohio Manual of Uniform Traffic Control Devices. They shall be maintained on supports meeting current safety criteria.

Uncover or place Work Zone Increased Penalties signs once the pavement surface is under construction for overlay removal, pavement repair, and placement of intermediate and surface courses. Uncover or place increased penalties signs no more than four hours before the actual start of work. Do not cover signs when lanes are re-opened to traffic subject to the provisions of the "Schedule of Through Lanes to be Maintained." Cover or remove signs between October 15 and April 1 each year. Remove signs once all work requiring lane closures is complete.

The signs shall be dual mounted. The first sign shall be placed between the Road Work Ahead (W20-1) sign and the next sign in the sequence. Signs shall be erected on each entrance ramp and every 2 miles (3 kilometers) through the construction work limits.

The Contractor may use signs and supports in used, but good condition provided the signs meet current ODOT specifications. Sign faces shall be reflectorized with Type G sheeting complying with the requirements of CMS 730.19.

Work Zone Increased Penalties signs and supports will be measured as the number of sign installations, including the sign and necessary supports. If a sign and support combination is removed and re-erected at another location as directed by the Engineer, it shall be considered another unit.

Payment for accepted quantities, complete, in place will be made at the contract unit price. Payment shall be full compensation for all materials, labor, incidentals and equipment for furnishing, erecting, maintaining, covering during suspension of work, and removal of the sign and support.

Item 614 - Work Zone Increased Penalties Sign.....**20 Each**

Mainline Bridge Work and Full-Depth Pavement Replacement Restrictions

The Contractor may perform the proposed work at all mainline bridges concurrently using one work zone for all locations. One lane in each direction may be closed during the weekend closures from 6pm Friday to 3pm Monday eastbound and from 9am Friday to 6am Monday westbound to allow for completion of the full-depth pavement replacement, the top of backwall repair work, and the micro-silica approach slab overlay. As stated in the requirements given in the Structures section of the plan, the top of backwall repair work and the approach slab overlay shall be placed in separate pours.

Schedule of Through Lanes to be Maintained

US-422 Eastbound and Westbound		
Location	Permitted Lane Reductions	
	One Lane Closed	Two Lanes Closed
SR-306 to SR-91 Westbound	Weekday * 9 AM to 6 AM (21 Hours) Weekend 9 AM Fri to 6 AM Mon	Weekday N/A Weekend N/A
SR-91 to SR-306 Eastbound	Weekday* 6 PM to 3 PM (21 Hours) Weekend 6 PM Fri to 3 PM Mon	Weekday N/A Weekend N/A

* All lanes shall be open to traffic westbound between 6AM and 9AM and Eastbound between 3PM and 6PM

US-422 Ramps (Single Lane Exit/Entrance)		
Location	Permitted Closures	
	Partial Width	Total Closure
Ramp 8 (US-422 WB Exit to SR-91)	N/A	Permitted From 8 PM to 5 AM for a Maximum of 3 Separate Times Using an Approved Detour
Ramp 9 (SR-91 Entrance to US-422 EB)	N/A	Permitted From 8 PM to 5 AM for a Maximum of 3 Separate Times Using an Approved Detour
Ramp A (US-422 WB Exit to SR-306)	Maintain 11' Lane	Permitted From 8 PM to 5 AM for a Maximum of 3 Separate Times Using an Approved Detour
Ramp B (SR-306 Entrance to US-422 EB)	Maintain 11' Lane	Permitted From 8 PM to 5 AM for a Maximum of 3 Separate Times Using an Approved Detour
Ramp C (US-422 EB Exit to SR-306)	Maintain 11' Lane	Permitted From 8 PM to 5 AM for a Maximum of 3 Separate Times Using an Approved Detour
Ramp D (SR-306 Entrance to US-422 WB)	Maintain 11' Lane	Permitted From 8 PM to 5 AM for a Maximum of 3 Separate Times Using an Approved Detour

All notes on the District 12 Permitted Lane Closure Times website, which is located on ODOT's website at the following location shall apply:

http://www.dot.state.oh.us/districts/D12/HighwayManagement/Pages/PermittedLaneClosures.aspx

The latest revision, 14 days prior to the bid date, will be in effect for this job.

Ramp Closures for Resurfacing

The Contractor may close one ramp at a time at each location for milling, partial depth pavement repairs, or resurfacing. Closures for ramps scheduled for repairs and resurfacing shall be limited according to the days of the week and hours shown in the "Schedule of Through Lanes to be Maintained" note.

The motoring public shall be given advance warning of closures at least 72 hours in advance through the use of either a ground mounted flat sheet sign or a portable changeable message sign. An LEO with patrol car (paid for separately) shall be used for each ramp closure and be present for the entire closure time.

Freeway entrance ramps shall be closed with a PCMS suggesting a recommended detour.

Freeway exit ramps shall be closed with a PCMS routing traffic to the next exit and a second PCMS indicating a U-turn at the exit (unless directed differently by the Project Engineer).

For ramp closures, one or two additional PCMS units will be needed as described above. These will be in addition to the PCMS units specified in the plans, and shall be paid for by the Contractor.

Item 622 – Barrier Misc.: Portable Temporary Moveable Barrier System

A. Description

This item consists of furnishing, installing and relocating a portable temporary moveable barrier system, including the necessary barrier transfer devices, in accordance with this specification, the plans and as directed by the Engineer.

B. Materials and Construction Methods

All temporary barrier installations shall be completed in accordance with the applicable sections of the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) including all revisions up to the date of advertisement of the contract.

The Portable Temporary Moveable Barrier System shall be fully tested to and shall meet the recommended criteria as defined in the National Cooperative Highway Research Program (NCHRP) Report 350 for test level 3 when properly installed according to the manufacturer's recommendations, the plans and as directed by the Engineer.

For design impacts the Portable Temporary Moveable Barrier System shall be capable of a lateral deflection of no more than 8 feet when impacted.

The Portable Temporary Moveable Barrier System shall be constructed from a series of individual sections. Each barrier section shall be no longer than 50 feet (15 meters) and no shorter than 3 feet (1 meter). A portable impact attenuator shall be installed at the leading edge of the barrier installation and the first two (2) sections of barrier shall be anchored to the roadway in accordance with the manufacturer's recommendations. Payment for the appropriate impact attenuators shall be included in this bid item. The last two (2) sections of barrier shall also be anchored to the roadway in accordance with the manufacturer's recommendations. Barrier-to-barrier connections shall be accomplished in accordance with the manufacturer's recommendations.

Sections of the Portable Temporary Moveable Barrier System shall be equipped with wheel and jack mechanisms that allow for manual movement of the barrier if directed by the Engineer.

Item 622 – Barrier Misc.: Portable Temporary Moveable Barrier System (Cont.)

The Portable Temporary Moveable Barrier System shall have the capability to be configured as a gate to facilitate work zone or median access. The gate function shall be integrated into the barrier and shall be capable of being moved with the barrier. The gate functionality shall only be used if directed by the Engineer.

A barrier transfer device shall be provided as per the manufacturer's recommendations and shall be incidental to this item. The barrier transfer device shall be a self-contained unit or can be an attachment for any typical construction apparatus. The barrier transfer devices shall be capable of laterally adjusting the barrier at a rate no more than one (1) mile in thirty (30) minutes. The moveable barrier system shall be moved at the beginning of the work day to close a lane as required by the Engineer and shall be moved at the end of the work day to open a lane as required by the Engineer.

Barrier reflectors and object markers, spaced at alternating 50 foot intervals per standard drawing MT-101.70, shall be installed on the Portable Temporary Moveable Barrier System. Payment for the appropriate barrier reflectors and object markers shall be included in this bid item.

It is expected that the Contractor shall rent Item 622 – Barrier Misc.: Portable Temporary Moveable Barrier System from the manufacturer/distributor for the duration of the pavement replacements near the bridges.

The Contractor shall submit his or her plan for phasing of the Portable Temporary Moveable Barrier System to the Engineer two weeks prior to mobilizing the Portable Temporary Moveable Barrier System for approval.

To reposition the moveable barrier system to close or open a lane, the Contractor shall position three (3) TMA's in the left lane/shoulder. One TMA shall remain at the end of the left lane taper, one shall follow the barrier positioning vehicle and one TMA shall follow further behind the second TMA. Barrier movement shall occur in the direction of traffic flow. A LEO shall follow the second TMA.

The Contractor shall submit to the Engineer the product specification information, design cut sheets and other information necessary for approval as determined by the Engineer.

C. Method of Measurement and Basis of Payment

The measurement of the item shall be made along the centerline in feet and payment shall be made at the unit price bid per foot of Item 622 – Barrier Misc.: Portable Temporary Moveable Barrier System.

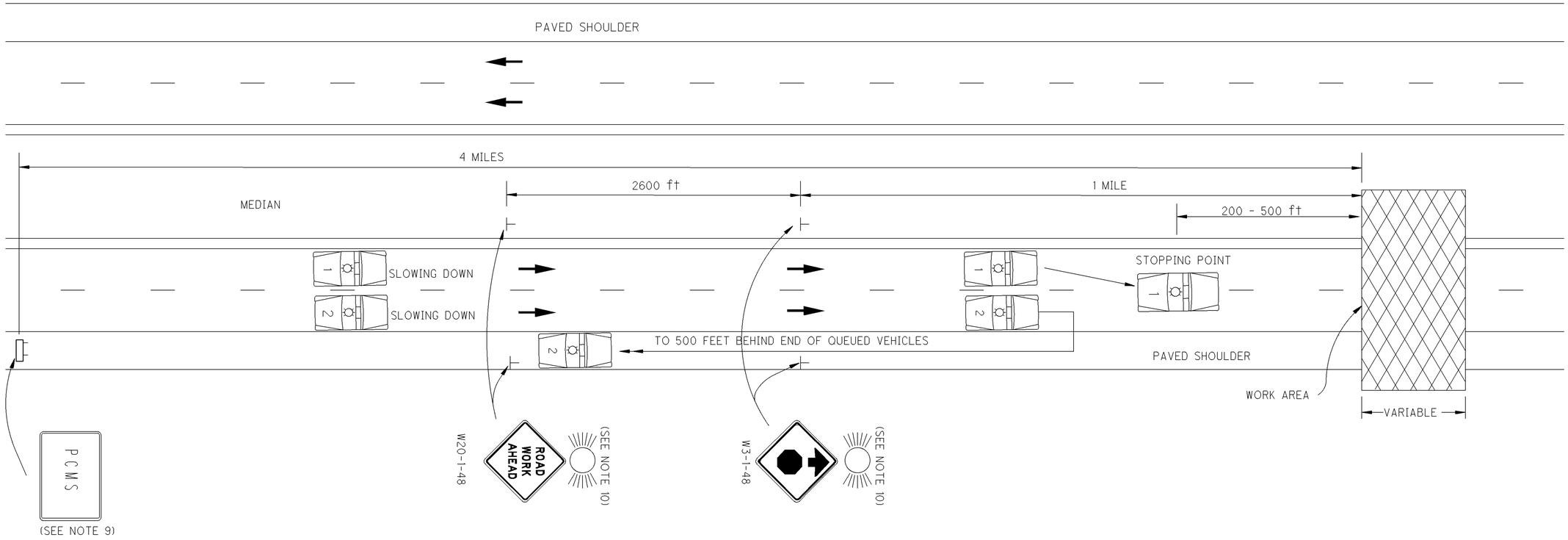
Payment for accepted quantities, complete in place, will be made at the contract price. Payment shall be full compensation for all materials, labor, incidentals and equipment for furnishing, erecting, relocating, maintaining and removing the Portable Temporary Moveable Barrier System. The following estimated quantity has been carried to the general summary:

Item 622 – Barrier Misc.: Portable Temporary Moveable Barrier System..... **14,120 Ft.**

CALCULATED | CHECKED

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY/GEA-422-18.31/0.00



NOTES

1. This type of highway closure shall be used for all construction, maintenance and utility operations when the duration of closure will not exceed 15 minutes.
2. A minimum of two law enforcement officers (LEO) with patrol cars per direction shall be provided to block traffic and pace motorists to a stop. The number of patrol cars shall equal the number of lanes closed on the highway.
3. Patrol cars, with lights flashing, should enter the stream of traffic at approximately 3 miles before the point of closure. At approximately 2 miles before the point of closure, they should begin the gradual slow down. Traffic shall be brought to a complete stop a safe distance, between 200 and 500 feet, from the work area. This slowing operation shall take no more than 10 minutes. After traffic has been stopped, one patrol car shall travel along the roadway shoulder 500 feet behind the end of the queued vehicles.
4. The Contractor shall not begin work until traffic has been brought to a complete stop.
5. All entrance ramps located between the stopped traffic and the work area shall be closed.
6. After the highway has been closed and reopened via this procedure, both of the following requirements shall have been met before implementation of another short duration closure, except with the approval of the Engineer:
   a) A minimum period of 15 minutes shall have elapsed; and
   b) The queued traffic shall have dissipated.
7. The time frame for stopping traffic shall be specified.
8. The public shall be given advance notice of the upcoming closure by providing portable changeable message signs at the site in advance of the scheduled closing. Closure information should also be provided to the Engineer.
9. An ODOT-approved portable changeable message sign, Class 1, shall be provided during operation. The message sign shall be placed approximately 4 miles in advance of the closure or as directed by the Engineer. The message shall be ROAD CLOSED AHEAD (2 sec.), PREPARE TO STOP (2 sec.)
10. The Contractor shall erect and maintain 48-inch ROAD WORK AHEAD and Stop Ahead signs on each side of the highway. Each sign shall be equipped with one Type A flashing warning light and one flare. There shall be one flare at each sign on both sides of the roadway. The flare shall be replaced if it burns out.

OFFICE OF TRAFFIC ENGINEERING

DESIGNED SHB
REVIEWED LAM
CHECKED

REVISION DATE 07/20/12

PID NUMBER 209960

PLAN INSERT SHEET

SHORT-DURATION CLOSURE OF MULTI-LANE DIVIDED HIGHWAY

CUY/GEA-422-18.31/0.00

1 / 1

17
44

SHEET NUMBER											PLAN SPLITS			ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
7-10	11-16	22	23	24	43						#1 01/NHS/PV	#2 02/NHS/BR							
																		ROADWAY	
		5508									5,508			202	23000	5,508	SQ YD	PAVEMENT REMOVED	
			180								180			202	32000	180	FT	CURB REMOVED	
			26213								26,213			202	38001	26,213	FT	GUARDRAIL REMOVED, AS PER PLAN	8
338												338		202	98300	338	SQ YD	REMOVAL MISC.: SLEEPER SLAB REMOVED	8
			270								270			209	15001	270	STATION	RESHAPING UNDER GUARDRAIL, AS PER PLAN	8
			934								934			209	70000	934	CU YD	BORROW	
			21338								21,338			606	15050	21,338	FT	GUARDRAIL, TYPE MGS	
			1738								1,738			606	15400	1,738	FT	MGS GUARDRAIL, TYPE 8	
			7								7			606	17500	7	EACH	POST END ANCHOR (OR CONCRETE BLOCK END ANCHOR)	
			25								25			606	26150	25	EACH	ANCHOR ASSEMBLY, MGS TYPE E	
			22								22			606	26550	22	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
			24								24			606	35002	24	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
			14								14			606	35102	14	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	
																		EROSION CONTROL	
											1,000			832	30000	1,000	EACH	EROSION CONTROL	
																		PAVEMENT	
1000											1,000			251	01001	1,000	SQ YD	PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN A	9
9200											9,200			251	01001	9,200	SQ YD	PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN B	9
5604											5,604			252	01500	5,604	FT	FULL DEPTH PAVEMENT SAWING	
		249633									249,633			254	01001	249,633	SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 1 3/4"	9
		506									506			254	01001	506	SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, VARIABLE, 1 3/4" TO 3 1/2"	9
		2223									2,223			254	01001	2,223	SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 3 1/2"	9
		1382										1,382		301	46000	1,382	CU YD	ASPHALT CONCRETE BASE, PG64-22	
		917										917		304	20000	917	CU YD	AGGREGATE BASE, 6"	
		20189									20,189			SPECIAL	40720500	20,189	GALLON	TACK COAT, TRACKLESS TACK	10
		10095									10,095			SPECIAL	40720510	10,095	GALLON	TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE	10
		10515									10,515			442	10001	10,515	CU YD	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446), AS PER PLAN, 1 1/2"	9
		12268									12,268			442	10100	12,268	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (446), 1 3/4"	
			1025								1,025			448	46061	1,025	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, UNDER GUARDRAIL, PG64-22, AS PER PLAN	8
			480								480			609	24000	480	FT	CURB, TYPE 4-A	
		1433									1,433			617	10101	1,433	CU YD	COMPACTED AGGREGATE, AS PER PLAN	9
22											22			618	40600	22	MILE	RUMBLE STRIPS, (ASPHALT CONCRETE)	
1											1			SPECIAL	69098000	1	EACH	MISC.: ROADWAY MOUNTED PAVEMENT SENSOR, FURNISHED AND INSTALLED	10
1											1			SPECIAL	69098000	1	EACH	MISC.: WEATHER STATION AND ROADWAY MOUNTED PAVEMENT SENSOR COMMISSIONING	10
																		TRAFFIC CONTROL	
			25	219							244			620	00500	244	EACH	DELINEATOR, POST MOUNTED	
				163							163			620	31200	163	EACH	REMOVAL OF DELINEATOR	
				646							646			621	00100	646	EACH	RPM	
				482							482			621	54000	482	EACH	RAISED PAVEMENT MARKER REMOVED	
			304								304			626	00100	304	EACH	BARRIER REFLECTOR, TYPE A	
	300										300			630	97800	300	SQ FT	SIGNING, MISC.: ADDITIONAL SIGNS, GROUND MOUNTED, AS DIRECTED BY THE ENGINEER	12
				16.288							16			646	10010	16.29	MILE	EDGE LINE, 6"	
				7.3561							7			646	10110	7.36	MILE	LANE LINE, 6"	
				4616							4,616			646	10310	4,616	FT	CHANNELIZING LINE, 12"	
				103							103			646	10400	103	FT	STOP LINE	
				15							15			646	20300	15	EACH	LANE ARROW	
				3913							3,913			646	20504	3,913	FT	DOTTED LINE, 6"	

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SHEET NUMBER											PLAN SPLITS			ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
7-10	11-16	22	23	24	43						#1 01/NHS/PV	#2 02/NHS/BR							
																		STRUCTURES 20 FOOT SPAN AND OVER	
																		CUY-422-1827 L (SFN 1814958)	
					167							167		SPECIAL	51911720	167	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					270							270		847	10001	270	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (2.25" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					270							270		847	30300	270	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		CUY-422-1827 R (SFN 1814966)	
					188							188		SPECIAL	51911720	188	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					308							308		847	10001	308	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (2.25" ± THICKNESS)	
					4							4		847	20001	4	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					308							308		847	30300	308	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		CUY-422-1894 L (SFN 1815148)	
					160							160		SPECIAL	51911720	160	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (2.25" ± THICKNESS)	
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (4" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		CUY-422-1894 R (SFN 1815156)	
					148							148		SPECIAL	51911720	148	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					224							224		847	10001	224	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (3.25" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		CUY-422-1911 L (SFN 1815172)	
					84							84		SPECIAL	51911720	84	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (2.25" ± THICKNESS)	
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (3.25" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		CUY-422-1911 R (SFN 1815180)	
					84							84		SPECIAL	51911720	84	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					224							224		847	10001	224	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (3.25" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		GEA-422-0017 L (SFN 2801515)	
					86							86		SPECIAL	51911720	86	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					224							224		847	10001	224	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (1.5" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	

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SHEET NUMBER											PLAN SPLITS			ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
7-10	11-16	22	23	24	43						#1 01/NHS/PV	#2 02/NHS/BR							
																		STRUCTURES 20 FOOT SPAN AND OVER CONT.	
																		GEA-422-0017 R (SFN 2801523)	
					86							86		SPECIAL	51911720	86	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					224							224		847	10001	224	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (1.5" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		GEA-422-0057 L (SFN 2801582)	
					87							87		SPECIAL	51911720	87	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (1.5" ± THICKNESS)	
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (2.25" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		GEA-422-0057 R (SFN 2801604)	
					82							82		SPECIAL	51911720	82	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					224							224		847	10001	224	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (1.5" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		GEA-422-0275 L (SFN 2801612)	
					78							78		SPECIAL	51911720	78	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					224							224		847	10001	224	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (1.5" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		GEA-422-0275 R (SFN 2801639)	
					78							78		SPECIAL	51911720	78	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL	
					2							2		SPECIAL	53000400	2	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	42
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (1.5" ± THICKNESS)	
					112							112		847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (2.25" ± THICKNESS)	
					2							2		847	20001	2	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	42
					224							224		847	30300	224	SQ YD	WEARING COURSE REMOVED, ASPHALT	
					8							8		847	50000	8	SQ YD	HAND CHIPPING	
																		MAINTENANCE OF TRAFFIC	
	600										600			614	11110	600	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
	15										15			614	11500	15	MONTH	WORKSITE TRAFFIC SUPERVISOR	
	20										20			614	12484	20	EACH	WORK ZONE INCREASED PENALTIES SIGN	
	48										48			614	18601	48	SIGN MNTH	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	13
	250										250			614	13000	250	CU YD	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	
	32.43										32			614	20101	32	MILE	WORK ZONE LANE LINE, CLASS I, 642 PAINT, AS PER PLAN, (6")	12
	69.18										69			614	22101	69	MILE	WORK ZONE EDGE LINE, CLASS I, 642 PAINT, AS PER PLAN, (6")	12
	8421										8,421			614	23201	8,421	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 642 PAINT, AS PER PLAN, (12")	12
	7194										7,194			614	24201	7,194	FT	WORK ZONE DOTTED LINE, CLASS I, 642 PAINT, AS PER PLAN, (6")	12
	138										138			614	26201	138	FT	WORK ZONE STOP LINE, CLASS I, 642 PAINT, AS PER PLAN	12
	18										18			614	30200	18	EACH	WORK ZONE ARROW, CLASS I, 642 PAINT	
	14120										14,120			622	90000	14,120	FT	BARRIER, MISC.: PORTABLE TEMPORARY MOVEABLE BARRIER SYSTEM	15
														614	11000	LUMP		MAINTAINING TRAFFIC	
15											15			619	16020	15	MONTH	FIELD OFFICE, TYPE C	
														623	10001	LUMP		CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN	7
														624	10000	LUMP		MOBILIZATION	

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REF. NO.	SHEET NO.	PLAN SPLIT NO.	STATION TO STATION		LENGTH	BEGIN WIDTH	ENDING WIDTH	AVERAGE WIDTH	AREA	202	254			301	304	407	407	442		617	
										Pavement Removed	Pavement Planing, Asphalt Concrete, As Per Plan, 1 3/4"	Pavement Planing, Asphalt Concrete, As Per Plan, Variable, 1 3/4" to 3 1/2" Avg.	Pavement Planing, Asphalt Concrete, As Per Plan, 3 1/2"	Asphalt Concrete Base, PG64-22, 9"	Aggregate Base, 6"	Tack Coat, Trackless Tack	Tack Coat, Trackless Tack for Intermediate Course	Asphalt Concrete, Surface Course, 12.5mm, Type A (466), As Per Plan , 1 1/2"	Asphalt Concrete, Intermediate Course, 19mm, Type A (466), 1 3/4"	Compacted Aggregate, As Per Plan, 2"	
					FT.	FT.	FT.	FT.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.	GALLON	GALLON	CU. YD.	CU. YD.	CU. YD.	
			US-422 Eastbound																		
	24	1	952+96	953+46	50	59	58	59	325	325	325			81	54	26	13	14	16	1	
	24	1	953+46	953+71	25	12	12	12	33	33	33			8	6	3	1	1	2	1	
			Bridge No. CUY-422-1827																		
	24	1	956+13	956+38	25	12	12	12	33	33	33			8	6	3	1	1	2	1	
	24	1	956+38	956+88	50	50	50	50	278	278	278			70	46	22	11	12	14	1	
	24	1	956+88	962+04 BK	516	50	36	43	2,463		2,463					197	99	103	120	13	
	24-25	1	1994+00 AH	2020+77	2677	38	38	38	11,303		11,303					904	452	471	549	66	
	25	1	2020+77	2021+27	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. CUY-422-1894																		
	25	1	2024+35	2024+85	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	25	1	2024+85	2029+06	421	38	38	38	1,776		1,776					142	71	74	86	10	
	25	1	2029+06	2029+56	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. CUY-422-1911																		
	25	1	2031+34	2031+84	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	25-28	1	2031+84	2082+01 BK	5017	38	38	38	21,185		21,185					1,695	847	883	1,030	124	
	28-29	1	2081+91 AH	2113+79	3187	38	38	38	13,458		13,458					1,077	538	561	654	79	
	29	1	2113+79	2114+29	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. GEA-422-0017																		
	29	1	2117+69	2118+19	50	38	38	38	211	211			211	53	35	17	8	9	10	1	
	29	1	2118+19	2120+25	207	38	38	38	872				872			70	35	36	42	5	
	29	1	2120+25	2120+85	60	38	38	38	253			253				20	10	11	12	1	
	29-30	1	2120+85	2135+17	1432	38	38	38	6,047		6,047					484	242	252	294	35	
	30	1	2135+17	2135+67	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. GEA-422-0057																		
	30	1	2137+68	2138+18	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	30-34	1	2138+18	2235+11	9693	38	38	38	40,928		40,928					3,274	1,637	1,705	1,990	239	
	34	1	2235+11	2236+44	133	38	50	44	648		648					52	26	27	32	3	
	34-35	1	2236+44	2240+80	436	50	50	50	2,422		2,422					194	97	101	118	11	
	35	1	2240+80	2243+58	278	50	75	63	1,933		1,933					155	77	81	94	7	
	35	1	2243+58	2249+83	625	38	38	38	2,638		2,638					211	106	110	128	15	
	35	1	2249+83	2250+33	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. GEA-422-0275																		
	36	1	2251+78	2252+28	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	36	1	2252+28	2261+26	898	38	38	38	3,792		3,792					303	152	158	184	22	
	36-37	1	2261+26	2263+80	254	75	60	68	1,904		1,904					152	76	79	93	6	
	37	1	2263+80	2273+00	920	60	40	50	5,111		5,111					409	204	213	248	23	
	37	1	2273+00	2273+75	75	40	38	39	325		325					26	13	14	16	2	
	37	1	2273+75	2274+00	25	38	38	38	106		106					8	4	4	5	1	
			US-422 Westbound																		
	24	1	954+02	954+52	50	53	50	52	286	286	286			72	48	23	11	12	14	1	
	24	1	954+52	954+77	25	12	12	12	33	33	33			8	6	3	1	1	2	1	
			Bridge No. CUY-422-1827																		
	24	1	957+19	957+44	25	12	12	12	33	33	33			8	6	3	1	1	2	1	
	24	1	957+44	957+94	50	48	48	48	267	267	267			67	45	21	11	11	13	1	
	24	1	957+94	959+29	135	48	48	48	723		723					58	29	30	35	3	
	24	1	959+29	960+30	101	48	36	42	471		471					38	19	20	23	2	
	24	1	960+30	962+04 BK	174	36	36	36	695		695					56	28	29	34	4	
	24-25	1	1994+00 AH	2020+77	2677	38	38	38	11,303		11,303					904	452	471	549	66	
	25	1	2020+77	2021+27	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. CUY-422-1894																		
	25	1	2024+35	2024+85	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	25	1	2024+85	2029+06	421	38	38	38	1,776		1,776					142	71	74	86	10	
	25	1	2029+06	2029+56	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Continued On Sheet 22																		
			TOTALS CARRIED TO SHEET 22							4,031	134,827	253	1,083	1,011	672	10,893	5,447	5,673	6,619	768	

CALCULATED JAC
CHECKED KDH

PAVEMENT SUBSUMMARY

CUY/GEA-422-18.31/0.00

REF. NO.	SHEET NO.	PLAN SPLIT NO.	STATION TO STATION		LENGTH	BEGIN WIDTH	ENDING WIDTH	AVERAGE WIDTH	AREA	202	254			301	304	407	407	442		617	
										Pavement Removed	Pavement Planing, Asphalt Concrete, As Per Plan, 1 3/4"	Pavement Planing, Asphalt Concrete, As Per Plan, Variable, 1 3/4" to 3 1/2" Avg.	Pavement Planing, Asphalt Concrete, As Per Plan, 3 1/2"	Asphalt Concrete Base, PG64-22, 9"	Aggregate Base, 6"	Tack Coat, Trackless Tack	Tack Coat, Trackless Tack for Intermediate Course	Asphalt Concrete, Surface Course, 12.5mm, Type A (466), As Per Plan , 1 1/2"	Asphalt Concrete, Intermediate Course, 19mm, Type A (466), 1 3/4"	Compacted Aggregate, As Per Plan, 2"	
					FT.	FT.	FT.	FT.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.	GALLON	GALLON	CU. YD.	CU. YD.	CU. YD.	
			US-422 Westbound Continued																		
			Bridge No. CUY-422-1911																		
	25	1	2031+34	2031+84	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	25-28	1	2031+84	2082+01 BK	5017	38	38	38	21,185		21,185					1,695	847	883	1,030	124	
	28-29	1	2081+91 AH	2112+61	3070	38	38	38	12,962		12,962					1,037	518	540	630	76	
	29	1	2112+61	2113+11	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. GEA-422-0017																		
	29	1	2117+46	2117+96	50	38	38	38	211	211			211	53	35	17	8	9	10	1	
	29	1	2117+96	2120+16	220	38	38	38	929				929			74	37	39	45	5	
	29	1	2120+16	2120+76	60	38	38	38	253			253				20	10	11	12	1	
	29-30	1	2120+76	2135+39	1463	38	38	38	6,178		6,178					494	247	257	300	36	
	30	1	2135+39	2135+89	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. GEA-422-0057																		
	30	1	2137+91	2138+41	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	30-34	1	2137+96	2231+30	9334	38	38	38	39,409		39,409					3,153	1,576	1,642	1,916	230	
	34-35	1	2231+30	2241+30	1000	38	60	49	5,444		5,444					436	218	227	265	25	
	35	1	2241+30	2243+30	200	60	75	68	1,500		1,500					120	60	63	73	5	
	35	1	2243+30	2249+83	653	38	38	38	2,758		2,758					221	110	115	134	16	
	35	1	2249+83	2250+33	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
			Bridge No. GEA-422-0275																		
	36	1	2251+78	2252+28	50	38	38	38	211	211	211			53	35	17	8	9	10	1	
	36	1	2252+28	2259+87	758	38	38	38	3,202		3,202					256	128	133	156	19	
	36-37	1	2259+87	2263+80	393	75	50	63	2,733		2,733					219	109	114	133	10	
	37	1	2263+80	2267+18	338	50	50	50	1,878		1,878					150	75	78	91	8	
	37	1	2267+18	2268+18	100	50	38	44	489		489					39	20	20	24	2	
	37	1	2268+18	2274+00	582	38	38	38	2,457		2,457					197	98	102	119	14	
			Ramp A																		
	36	1	2251+04	2251+41	37	78	33	56	228		228					18	9	10	11	1	
	36	1	2251+41	2254+80	339	33	33	33	1,242		1,242					99	50	52	60	8	
	36	1	2254+80	2259+87	507	26	26	26	1,466		1,466					117	59	61	71	13	
			Ramp B																		
	36	1	2251+59	2252+46	87	108	25	67	645		645					52	26	27	31	2	
	36	1	2252+46	2261+80	934	25	25	25	2,595		2,595					208	104	108	126	23	
			Ramp C																		
	35	1	2243+57	2245+25	168	25	25	25	467		467					37	19	19	23	4	
	35	1	2245+25	2246+65	140	25	34	30	459		459					37	18	19	22	3	
	35	1	2246+65	2247+14	49	34	46	40	219		219					18	9	9	11	1	
	35	1	2247+14	2250+81	366	46	46	46	1,873		1,873					150	75	78	91	9	
	35	1	2250+81	2251+28	47	46	106	76	399		399					32	16	17	19	1	
			Ramp D																		
	35	1	2243+30	2249+71	641	25	25	25	1,780		1,780					142	71	74	87	16	
	35	1	2249+71	2250+31	61	25	38	32	212		212					17	8	9	10	1	
	35	1	2250+31	2250+69	37	38	110	74	307		307					25	12	13	15	1	
			Median Turn-Arounds																		
	24-25		2006+76	CADD-Measured					340		340					27	14	14	17	1	
	29		2106+87	CADD-Measured					366		366					29	15	15	18	1	
	30		2148+50	CADD-Measured					385		385					31	15	16	19	1	
	33		2218+67	CADD-Measured					362		362					29	14	15	18	1	
			TOTALS THIS SHEET							1,477	114,806	253	1,140	371	245	9,296	4,648	4,842	5,649	665	
		1	**TOTALS, SHEET 21**							4,031	134,827	253	1,083			10,893	5,447	5,673	6,619	768	
		2	**TOTALS, SHEET 21**											1,011	672						
TOTALS CARRIED TO GENERAL SUMMARY										5,508	249,633	506	2,223	1,382	917	20,189	10,095	10,515	12,268	1,433	
			PLAN SPLIT #1 TOTAL							5,508	249,633	506	2,223			20,189	10,095	10,515	12,268	1,433	
			PLAN SPLIT #2 TOTAL											1,382	917						

CALCULATED JAC
CHECKED KDH

PAVEMENT SUBSUMMARY

CUY/GEA-422-
18.31/0.00

GUARDRAIL SUBSUMMARY

CALCULATED JAC
CHECKED KDH

REF. NO.	SHEET NO.	PLAN SPLIT NO.	EXISTING LOCATIONS FROM	EXISTING LOCATIONS TO	PROPOSED LOCATIONS FROM	PROPOSED LOCATIONS TO	DIRECTION	SIDE	LATERAL OFFSET (From near edgeline) FT.	202 Curb Removed FT.	202 Guardrail Removed, As Per Plan FT.	209 Reshaping Under Guardrail, As Per Plan STA.	209 Borrow CY.	448 Asphalt Concrete Intermediate Course, Type 1, PG64-22, Under Guardrail, As Per Plan CY.	606 Guardrail, Type MGS FT.	606 MGS Guardrail, Type 8 FT.	606 Post End Anchor (Or Concrete Block End Anchor) EACH	606 Anchor Assembly, MGS Type E EACH	606 Anchor Assembly, MGS Type T EACH	606 MGS Bridge Terminal Assembly, Type 1 EACH	606 MGS Bridge Terminal Assembly, Type 2 EACH	609 Curb, Type 4A FT.	620 Delineator, Post Mounted, (White)	620 Delineator, Post Mounted, (Yellow)	626 Barrier Reflector, Type A FT.
GR-1	25	1	956+03.21	960+96.41	956+03.21	960+90.71	EB	RT	10		487.5	5	18	19	475.0				1		1				6
GR-2	25	1	957+33.91	961+26.29	957+33.91	961+21.39	WB	RT	6		387.5	4	14	15	312.5			1		1		20		1	5
GR-3	25	1	957+94.90	962+03.64=	957+94.90	962+03.64	WB	LT	10		425.0	5	16	19	350.0			1		1		20	1		5
			1994+00.00	1994+24.83	1994+00.00	1994+25.03																			
GR-4	26	1	2011+51.35	2020+27.28	2011+52.25	2020+27.28	EB	RT	12		875.0	9	32	34	800.0			1		1		20	1		10
GR-5	26	1	2014+84.40	2022+23.00	2014+85.50	2022+23.00	WB	LT	12		737.5	8	27	30	725.0				1		1				8
GR-6	26	1	2016+25.91	2020+94.47	2018+06.99	2020+94.47	EB	LT	6		475.0	3	11	12	212.5			1		1		20		1	4
GR-7	26	1	2023+34.94	2029+50.72	2023+34.94	2029+50.72	EB	RT	12		635.0	7	24	26	610.0					1	1	20			7
GR-8	26	1	2024+82.88	2029+52.80	2024+82.88	2029+52.80	WB	RT	6		470.0	5	17	19	445.0					1	1	20			6
GR-9	26	1	2025+63.78	2029+59.58	2025+63.78	2029+59.58	WB	LT	12	20	395.0	4	15	15	370.0					1	1	20			5
GR-10	26	1	2025+62.00	2029+56.61	2026+94.07	2029+56.61	EB	LT	6		400.0	3	10	12	187.5			1		1		20		1	4
GR-11	26, 27	1	2031+39.49	2046+31.04	2031+39.49	2046+14.44	WB	LT	12		1475.0	15	55	56	1400.0			1		1		20	1		16
GR-12	26, 27	1	2031+30.16	2036+10.77	2031+30.16	2036+17.67	EB	RT	12		487.5	5	18	19	475.0				1		1				6
GR-13	26, 27	1	2031+39.83	2035+33.84	2031+39.83	2034+27.34	WB	RT	6	20	387.5	3	11	12	212.5			1		1		20		1	4
GR-14	27	1	2049+62.36	2055+00.10	2049+62.36	2054+99.90	EB	RT	12		550.0	6	20	23	287.5	250	1		1						7
GR-15	29	1	2084+62.29	2093+00.04	2084+62.29	2092+99.84	EB	RT	12		850.0	9	31	34	587.5	250	1		1						10
GR-16	29	1	2086+00.21	2093+37.77	2086+00.31	2093+37.77	WB	LT	12		750.0	8	28	30	487.5	250	1		1						9
GR-17	29, 30	1	2102+51.09	2113+03.17	2102+53.09	2113+03.18	WB	LT	12		1050.0	11	39	41	1037.5				1		1				12
GR-18	29, 30	1	2103+58.67	2114+32.92	2103+57.97	2114+32.92	EB	RT	12		1075.0	11	40	41	1000.0			1		1		20	1		12
GR-19	30	1	2110+22.04	2114+18.76	2110+56.23	2114+18.76	EB	LT	6		400.0	4	13	15	287.5			1		1		20		1	5
GR-20	30	1	2117+42.11	2119+23.16	2117+42.11	2119+23.16	WB	LT	12		180.0	2	7	8	155.0					1	1	20			3
GR-21	30	1	2117+54.82	2123+46.68	2117+54.82	2122+29.83	WB	RT	6		587.5	5	18	19	400.0			1		1		20		1	6
GR-22	30	1	2117+53.18	2119+90.25	2117+53.18	2119+90.65	EB	LT	6		237.5	3	9	12	225.0				1		1				3
GR-23	30	1	2117+76.83	2119+34.37	2117+76.83	2119+34.37	EB	RT	12		158.0	2	6	8	133.0					1	1	20			3
GR-24	30	1	2119+73.44	2122+35.99	2119+73.44	2122+35.99	WB	RT	6		262.5	3	10	12	0.0	237.5	1			1		20			4
GR-25	30, 31	1	2126+60.25	2135+74.96	2126+62.45	2135+74.96	EB	RT	12	20	912.5	10	34	38	850.0			1		1		20	1		10
GR-26	31	1	2131+95.63	2135+85.34	2133+22.80	2135+85.34	EB	LT	6	20	387.5	3	10	12	187.5			1		1		20		1	4
GR-27	31	1	2134+94.60	2136+08.59	2134+96.10	2136+08.59	WB	LT	12		112.5	2	4	8	100.0				1		1				2
GR-28	31	1	2137+49.06	2139+01.28	2137+49.06	2138+99.08	EB	RT	12		150.0	2	6	8	137.5				1		1				3
GR-29	31	1	2137+77.38	2141+62.81	2137+77.38	2141+64.91	WB	RT	6	20	387.5	4	14	15	312.5			1		1		20		1	5
GR-30	31	1	2137+84.56	2145+36.70	2137+84.56	2145+36.70	WB	LT	12	20	762.5	8	28	30	487.5	250	1			1		20			9
GR-31	31	1	2141+62.88	2146+00.20	2141+62.68	2146+00.20	EB	RT	12		437.5	5	16	19	375.0			1	1				1		5
GR-32	32	1	2159+00.19	2170+37.77	2159+00.19	2170+37.67	WB	LT	12		1137.5	12	42	45	1075.0			1	1				1		12
GR-33	32	1	2162+62.56	2169+00.23	2162+62.56	2169+00.03	EB	RT	12		650.0	7	24	26	387.5	250	1		1						8
GR-34	33	1	2179+54.68	2183+92.68	2179+54.68	2183+92.18	EB	RT	12		450.0	5	17	19	187.5	250	1		1						6
GR-35	33	1	2181+42.73	2190+18.93	2181+42.73	2190+30.23	WB	LT	12		887.5	9	32	34	812.5			1	1				1		10
GR-36	33, 34	1	2196+92.71	2202+32.96	2196+95.41	2202+32.96	WB	LT	12		537.5	6	20	23	475.0			1	1				1		6
GR-37	34, 35	1	2218+66.60	2227+41.97	2218+66.60	2227+41.57	EB	RT	12		875.0	9	32	34	812.5			1	1				1		10
GR-38	34, 35	1	2218+81.24	2228+61.47	2218+81.24	2228+68.77	WB	RT	6		987.5	10	36	38	912.5			1	1					1	11
GR-39	35, 36	1	2236+55.26	2248+62.53	2236+55.26	2248+62.53	EB	RT	12		1237.5	13	46	49	1175.0			1	1				1		13
GR-40	36	1	2239+92.78	2246+76.56	2239+92.78	2246+76.56	WB	LT	12		700.0	7	26	26	637.5			1	1				1		8
GR-41	36	1	2246+42.07	2250+44.90	2247+69.93	2250+44.90	EB	LT	6	20	400.0	3	10	12	200.0			1		1		20		1	4
GR-42	36	1	2246+66.79	2250+34.89	2246+59.89	2250+34.89	EB	RT	12		375.0	4	14	15	300.0			1		1		20	1		5
GR-43	36	1	2247+77.48	2250+22.08	2247+72.08	2250+22.08	WB	RT	6		250.0	2	7	8	187.5				1		1				3
GR-44	37	1	2251+61.80	2255+39.74	2251+61.80	2254+86.80	WB	RT	6	20	325.0	4	12	15	250.0			1		1		20		1	4
GR-45	37	1	2251+67.41	2255+70.03	2251+67.41	2254+29.92	WB	LT	12	20	387.5	3	10	12	187.5			1		1		20	1		4
GR-46	37	1	2251+74.64	2252+94.09	2251+74.64	2252+99.69	EB	RT	12		125.0	2	5	8	112.5				1		1				2
TOTALS CARRIED TO GENERAL SUMMARY										180	26213	270	934	1025	21338	1738	7	25	22	24	14	480	25		304
PLAN SPLIT #1 TOTAL										180	26213.0	270	934	1025	21338	1738	7	25	22	24	14	480	25		304
PLAN SPLIT #2 TOTAL																									

CUY/GEA-422-18.31/0.00

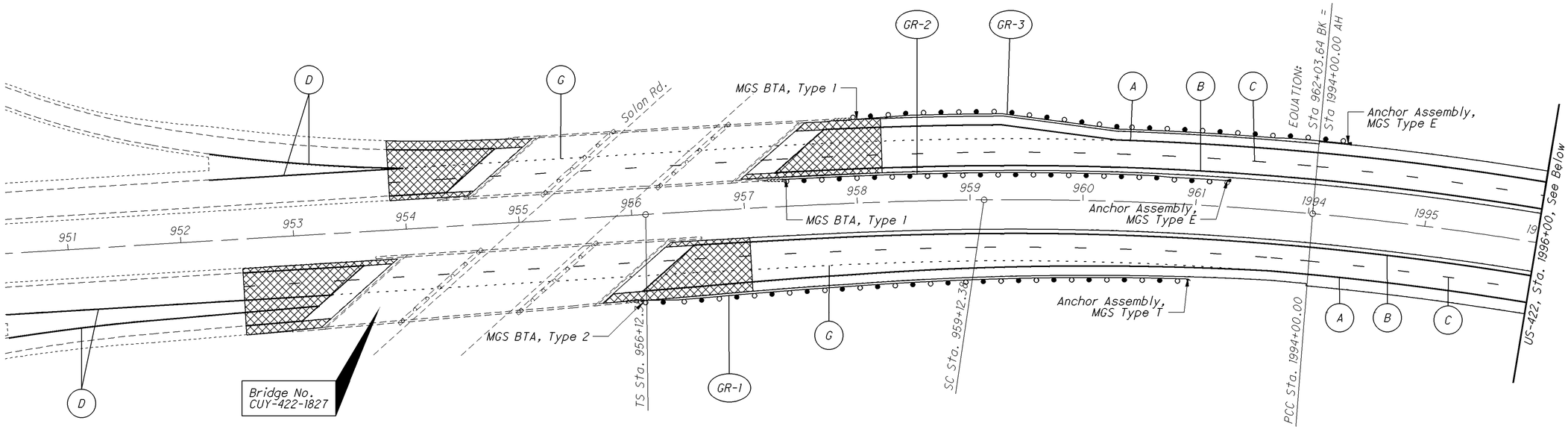
SHEET NO.	PLAN SPLIT NO.	LOCATION	STATION FROM	STATION TO	SIDE	646 Edge Line, 6" White FT.	646 Edge Line, 6" Yellow FT.	646 Lane Line, 6" FT.	646 Channelizing Line, 12" FT.	646 Stop Line FT.	646 Lane Arrows EACH	646 Dotted Line, 6" FT.			620 Delineator, Post Mounted EACH	620 Removal of Delineator EACH	621 RPM (White) EACH	621 RPM (White/Red) EACH	621 RPM (Yellow/Red) EACH	621 Raised Pavement Marker Removed EACH
		US-422																		
24	1		952+53	962+04 BK	Both	950	950	950							5	4	13			10
24-28	1		1994+00 AH	2082+01 BK	Both	8,801	8,801	8,801							44	33	111			83
28-31	1		2081+91 AH	2175+41	Both	9,349	9,349	9,349							47	35	118			88
		US-422 Eastbound																		
24	1		950+42	953+31	EB				566											
24	1		953+31	962+04	EB							865								
31-34	1		2175+41	2235+30	EB	5,989	5,989	5,989							30	22	76			57
34-35	1		2235+30	2241+53	EB	623	623	623				618			5	3	9			7
35	1		2241+53	2243+51	EB	198	198	198	198						1	1	3	6		7
35-36	1		2243+51	2261+34	EB	1,783	1,783	1,783							9	7	23			17
36-37	1		2261+34	2265+37	EB	403	403	403	403						1	1	6			5
37	1		2265+37	2271+38	EB	600	600	600				600			5	3	9			6
37	1		2271+38	2273+50	EB	212	212	212							2	2	4			3
		US-422 Westbound																		
24	1		952+26	954+00	WB				345											
24	1		954+00	960+26	WB							650								
31-34	1		2175+41	2232+89	WB	5,749	5,749	5,749							29	22	73			55
34-35	1		2232+89	2239+05	WB	616	616	616				616			5	3	9			7
35	1		2239+05	2242+95	WB	390	390	390	390						1	1	6			4
35-36	1		2242+95	2259+79	WB	1,684	1,684	1,684							8	6	22			17
36-37	1		2259+79	2262+47	WB	268	268	268	268						1	1	4	8		9
37	1		2262+47	2268+26	WB	579	579	579				564			4	3	8			6
37	1		2268+26	2273+50	WB	524	524	524							3	2	8			6
		Ramp A																		
36	1		2251+04	2254+00	WB	296	296		283	46	6				1	1	16	8		18
36	1		2254+00	2259+88	WB	588	588								3	2				
36	1		2259+88	2262+55	WB	267	267		269						1	1		8		6
		Ramp B																		
36	1		2251+59	2261+42	EB	983	983								5	4			13	10
36	1		2261+42	2263+80	EB	238	238		404						1	1		11		8
		Ramp C																		
35	1		2241+59	2243+57	EB	198	198		200						1	1		6		5
35	1		2243+57	2245+96	EB	239	239								1	1			4	
35	1		2245+96	2247+83	EB	187	187	120	188		3				1	1	3	6		6
35	1		2247+83	2251+28	EB	345	345		710	57	6				2		16	19		26
		Ramp D																		
35	1		2241+30	2243+01	WB	171	171		392						1	1		11		8
35	1		2243+01	2250+69	WB	768	768								4	3			11	8
SUBTOTALS						43,000	43,000	38,840	4,616	103	15	3,913			219	163	535	83	28	482
TOTALS CARRIED TO GENERAL SUMMARY						16.29 MI		7.36 MI	4,616	103	15	3,913			219	163	646			482
PLAN SPLIT #1 TOTAL						8.14 MI	8.14 MI	7.36 MI	4,616	103	15	3,913			219	163	535	83	28	482
PLAN SPLIT #2 TOTAL																				

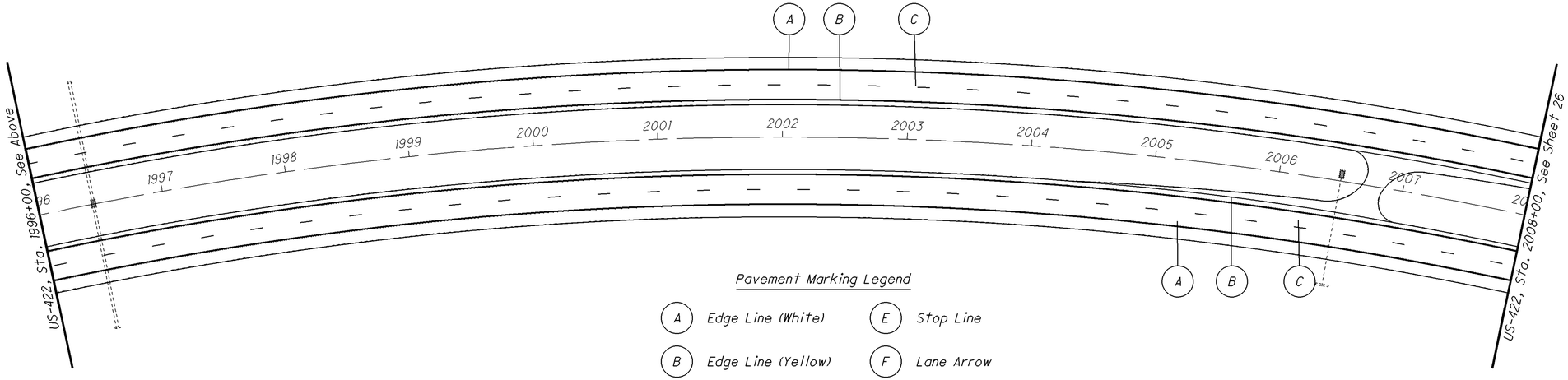
CALCULATED JAC
CHECKED KDH

TRAFFIC CONTROL SUBSUMMARY

CUY/GEA-422-18.31/0.00

NOTE: Shoulder width changes at Station Equation





Item 202 - Pavement Removed
Item 301 - Asphalt Concrete Base, PG64-22

Pavement Marking Legend

A	Edge Line (White)	E	Stop Line
B	Edge Line (Yellow)	F	Lane Arrow
C	Lane Line, 6"	G	Dotted Line, 6"
D	Channelizing Line, 12"		

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HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 952+00.00 to Sta. 2008+00.00

CUY/GEA-422-18.31/0.00

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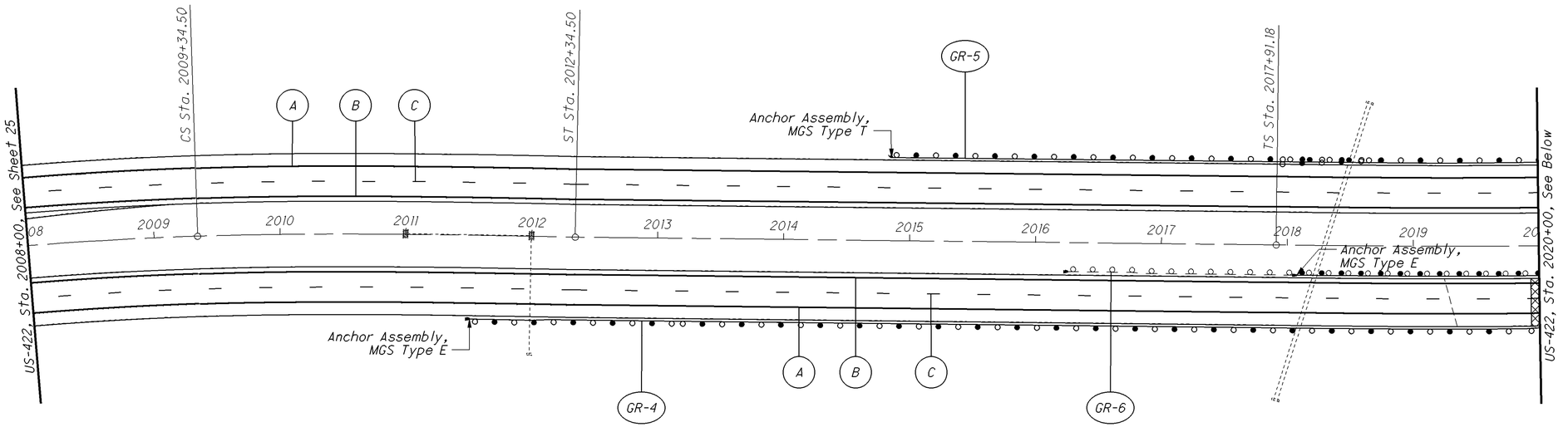
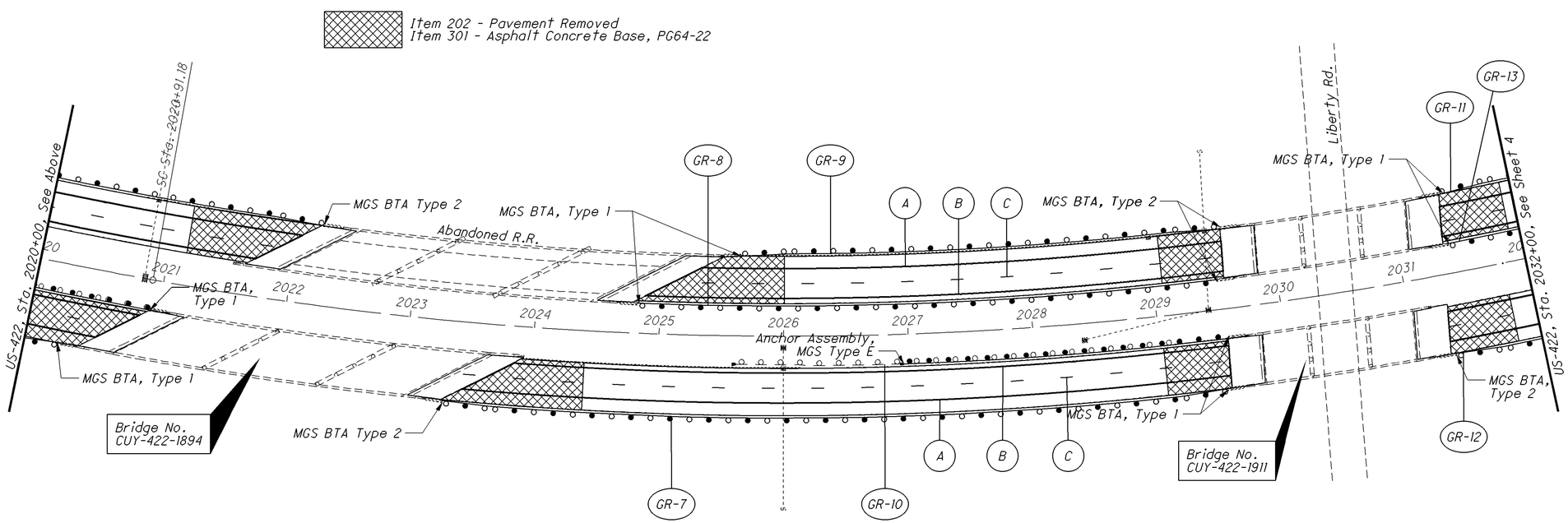
44





For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
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CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422 Sta. 2008+00.00 to Sta. 2032+00.00

CUY/GEA-422-18.31/0.00

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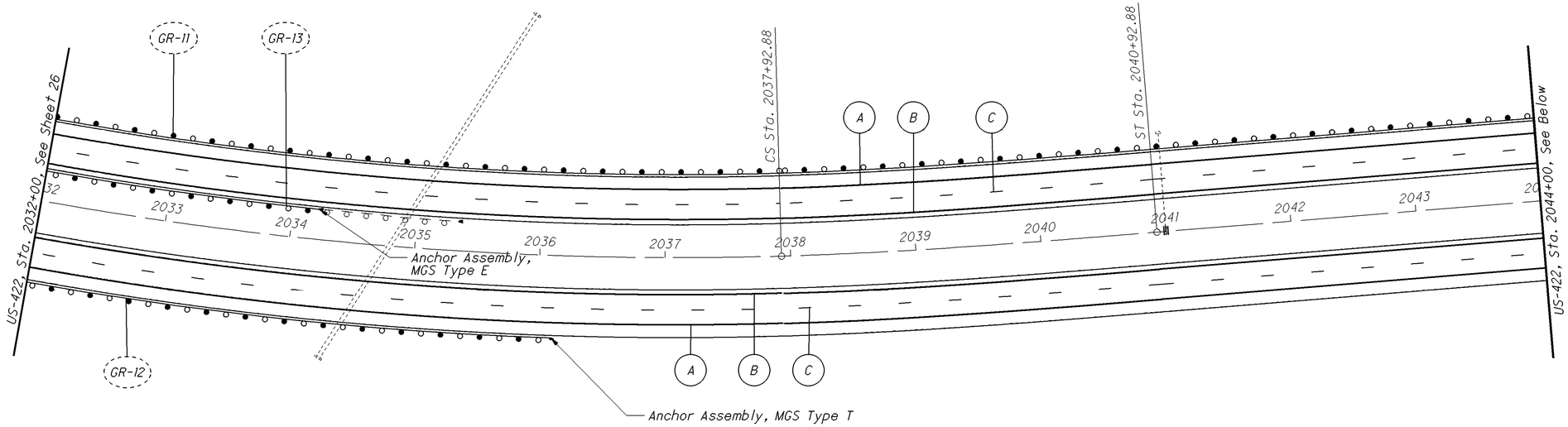

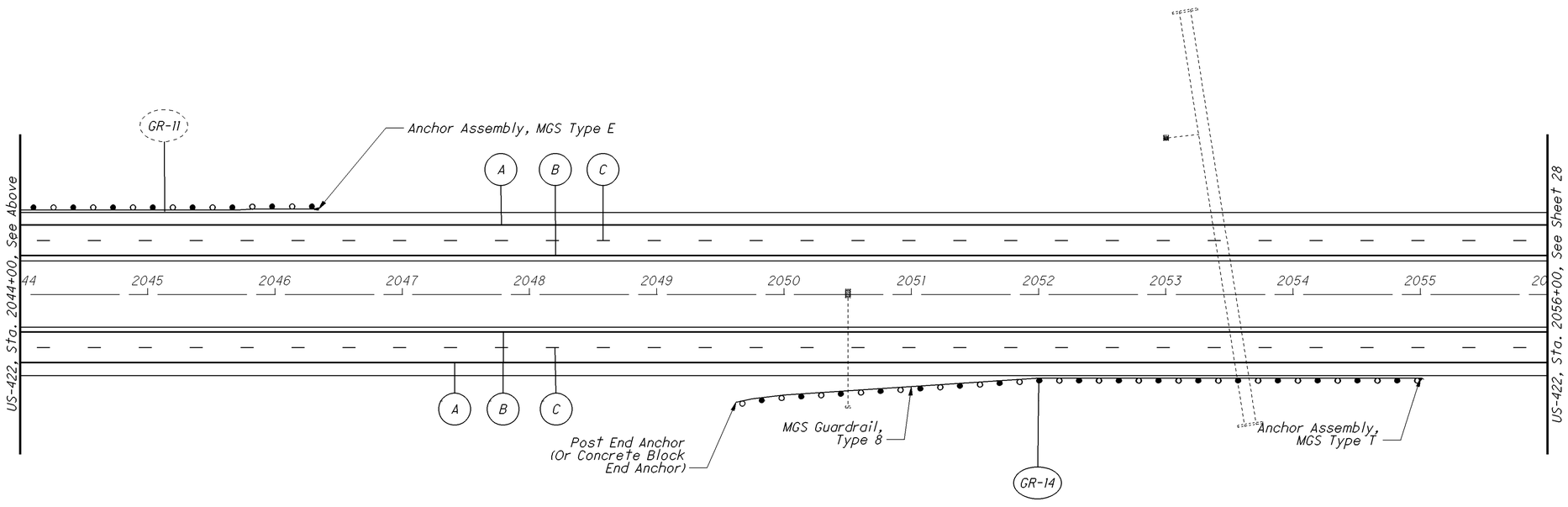

For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
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CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2032+00.00 to Sta. 2056+00.00

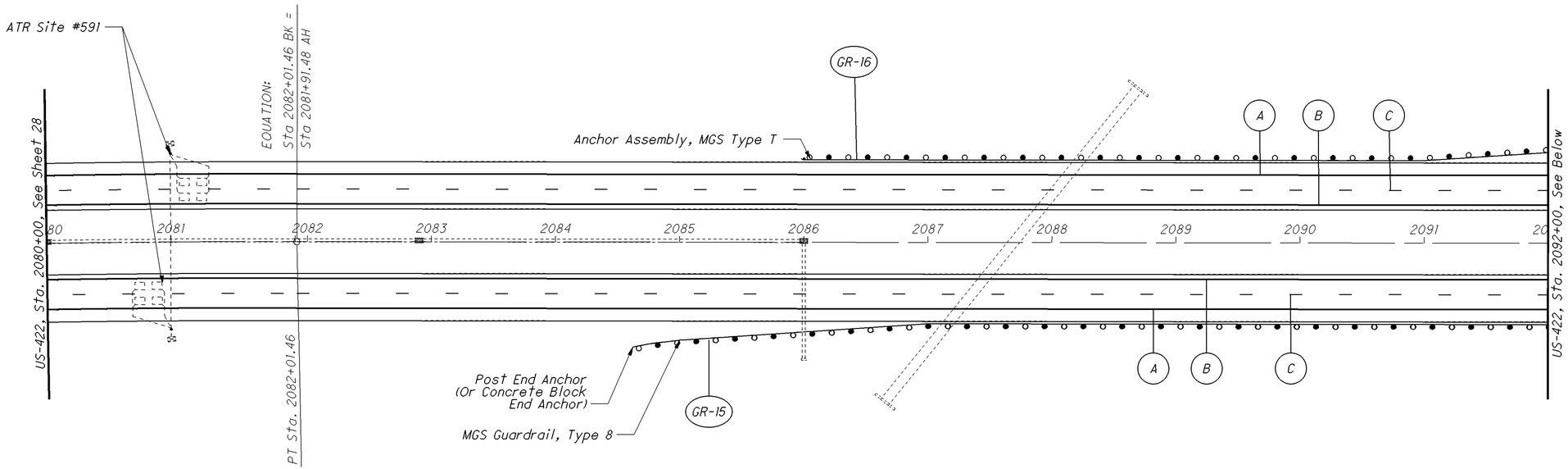
CUY/GEA-422-18.31/0.00

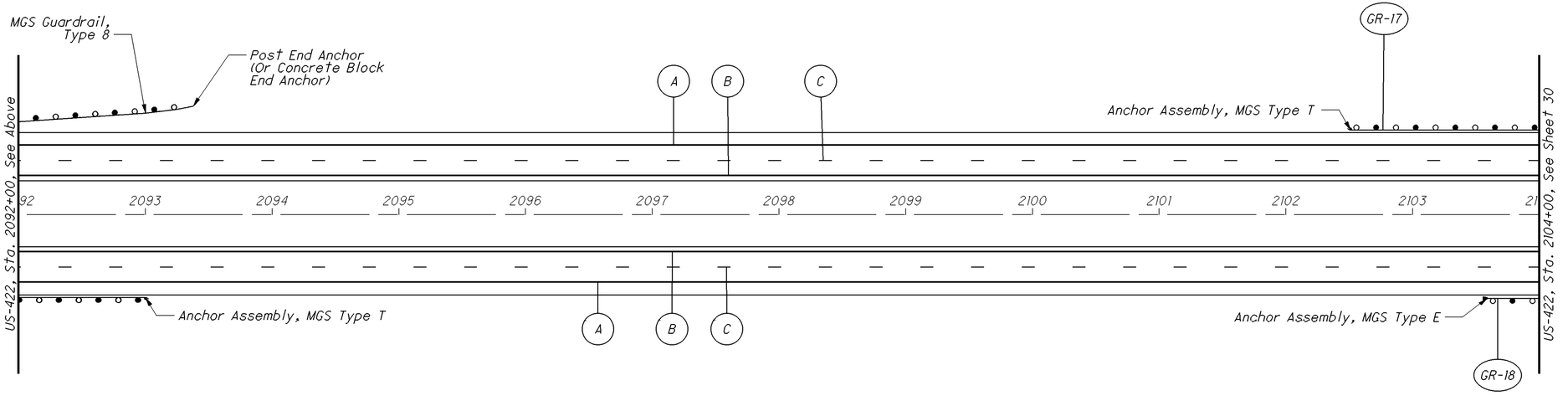
For Pavement Marking Legend, See Sheet 25

CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2056+00.00 to Sta. 2080+00.00

CUY/GEA-422-
18.31/0.00





For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
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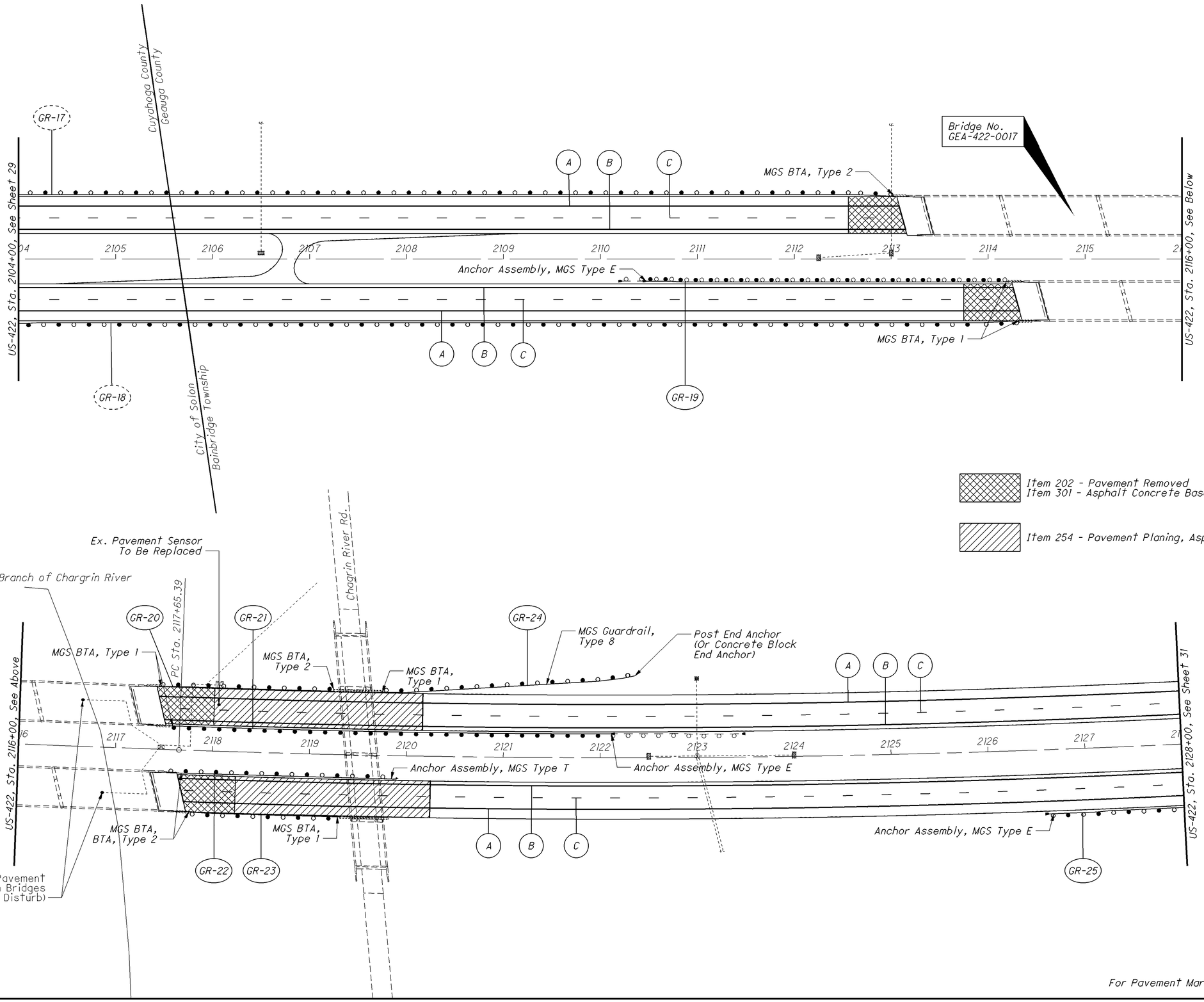
CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2080+00.00 to Sta. 2104+00.00

CUY/GEA-422-18.31/0.00



HORIZONTAL SCALE IN FEET
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CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2104+00.00 to Sta. 2128+00.00

CUY/GEA-422-18.31/0.00

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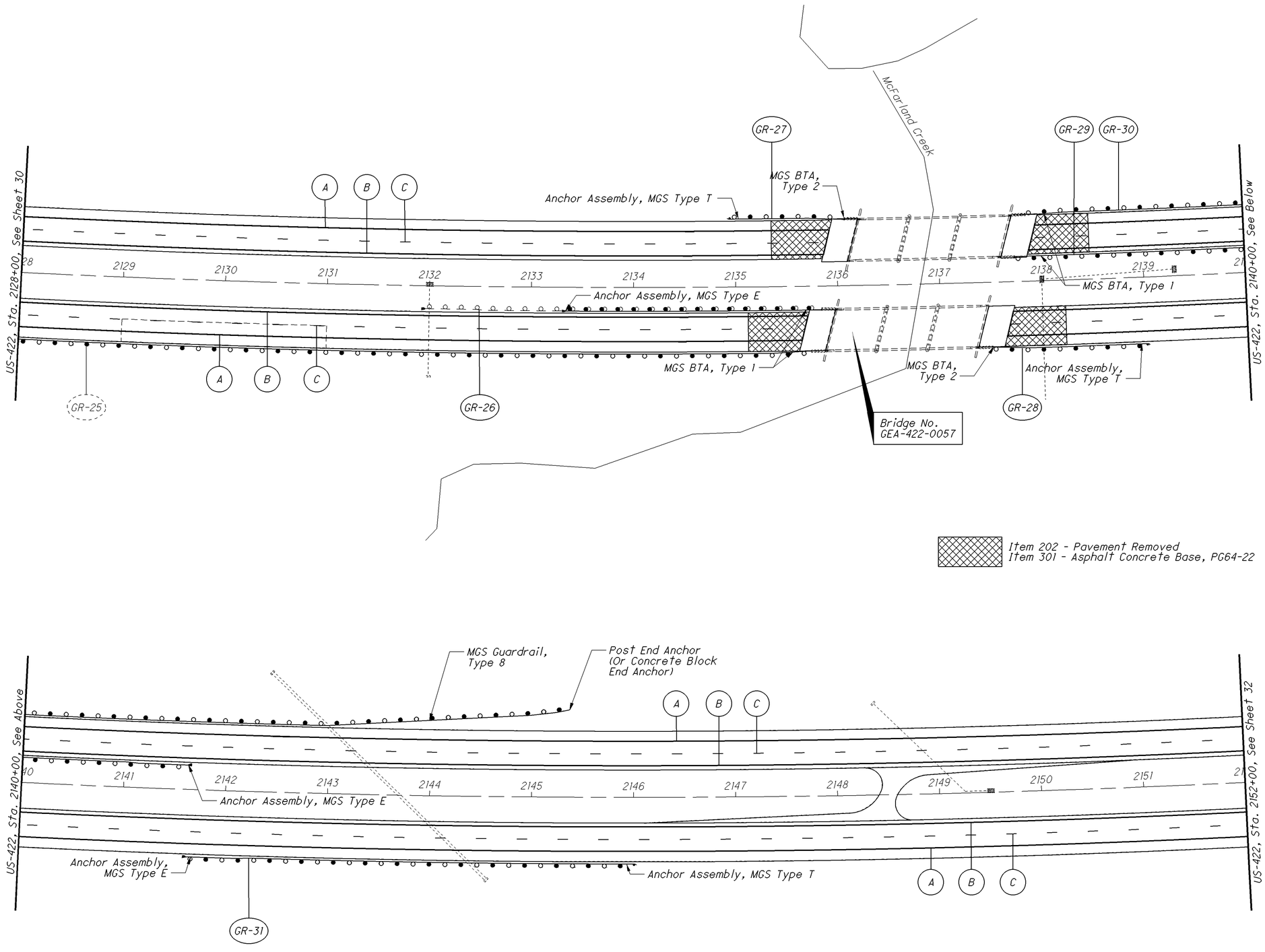

For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
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CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2128+00.00 to Sta. 2152+00.00

CUY/GEA-422-18.31/0.00

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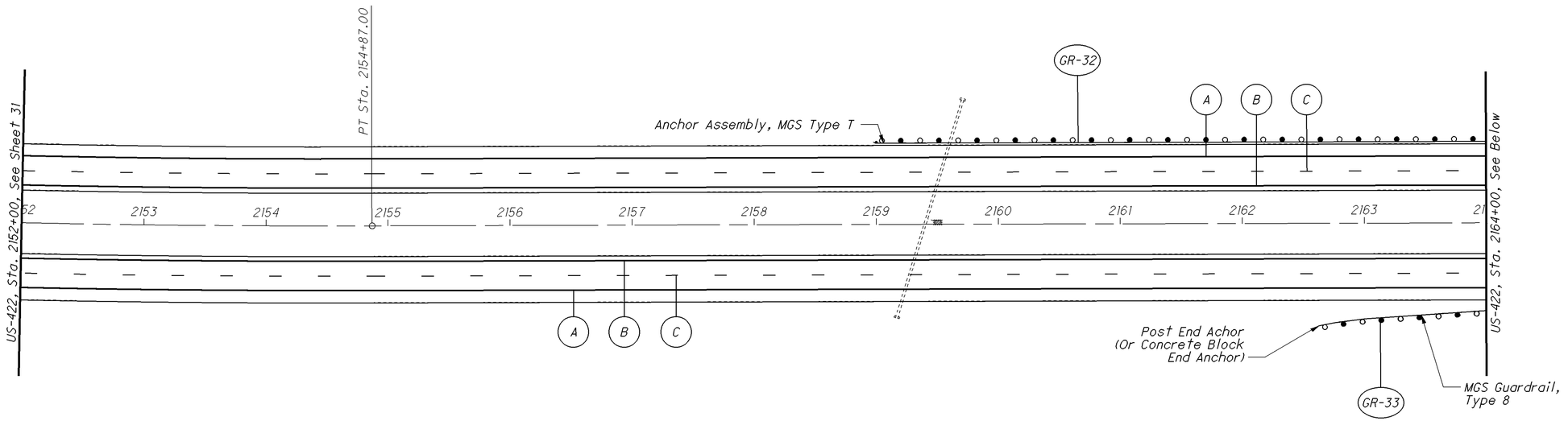
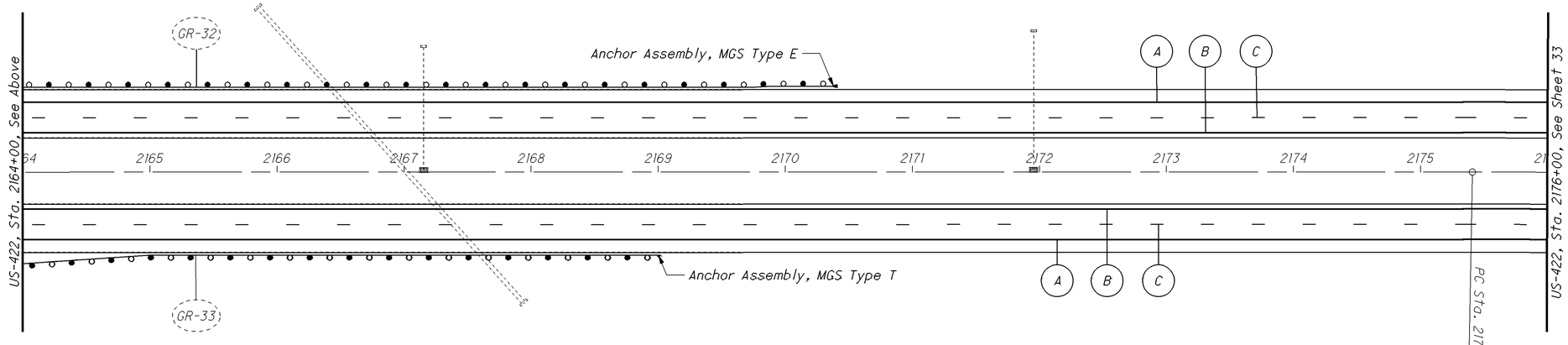




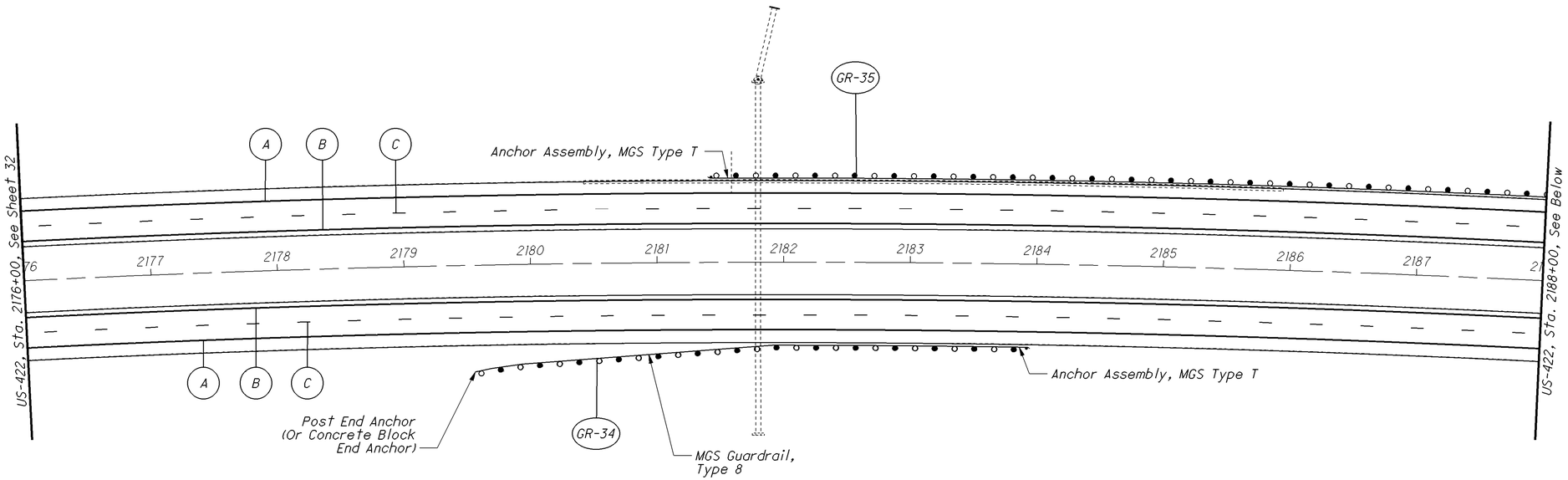
For Pavement Marking Legend, See Sheet 25

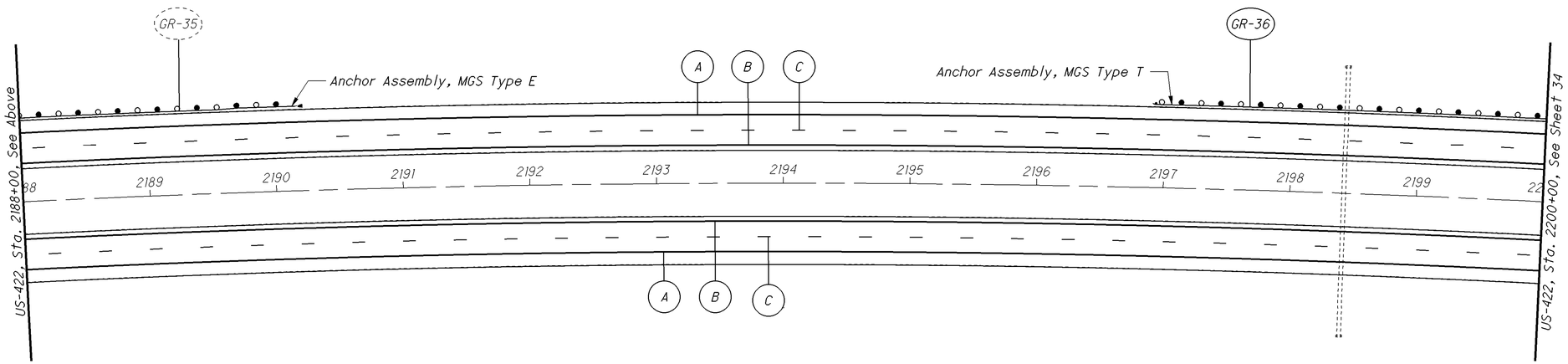
HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2152+00.00 to Sta. 2176+00.00

CUY/GEA-422-18.31/0.00





For Pavement Marking Legend, See Sheet 25

N

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2176+00.00 to Sta. 2200+00.00

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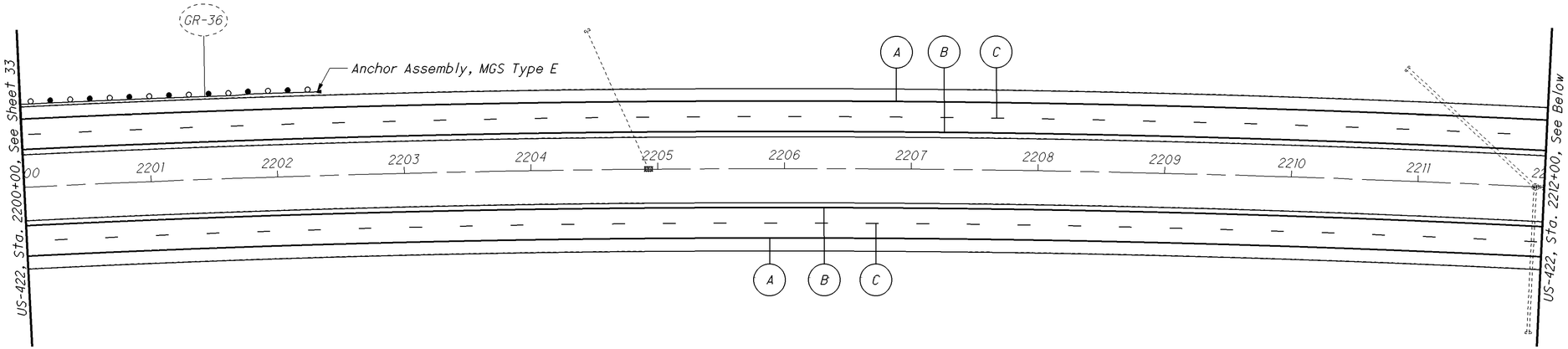

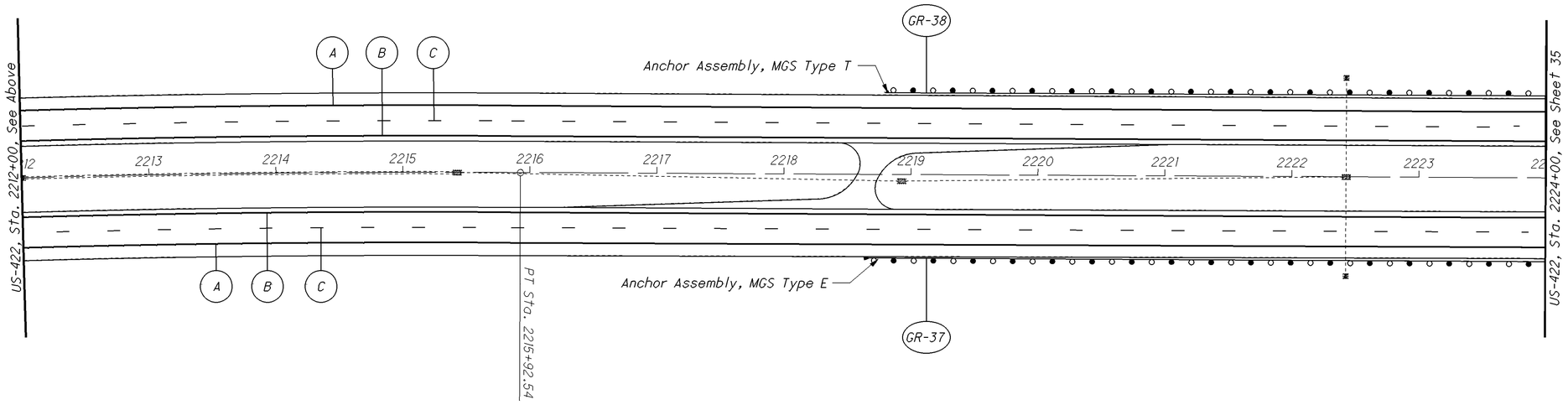

For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2200+00.00 to Sta. 2224+00.00

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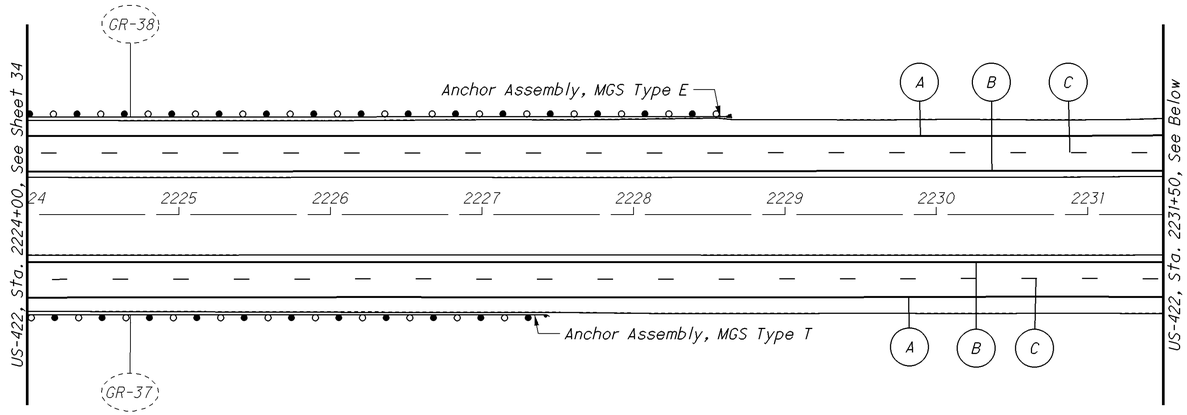

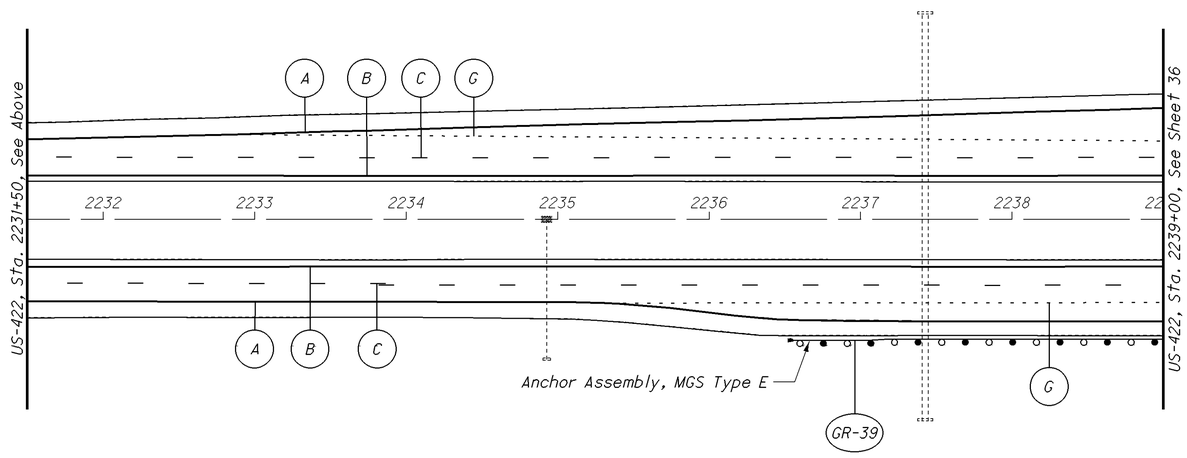

For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2224+00.00 to Sta. 2239+00.00

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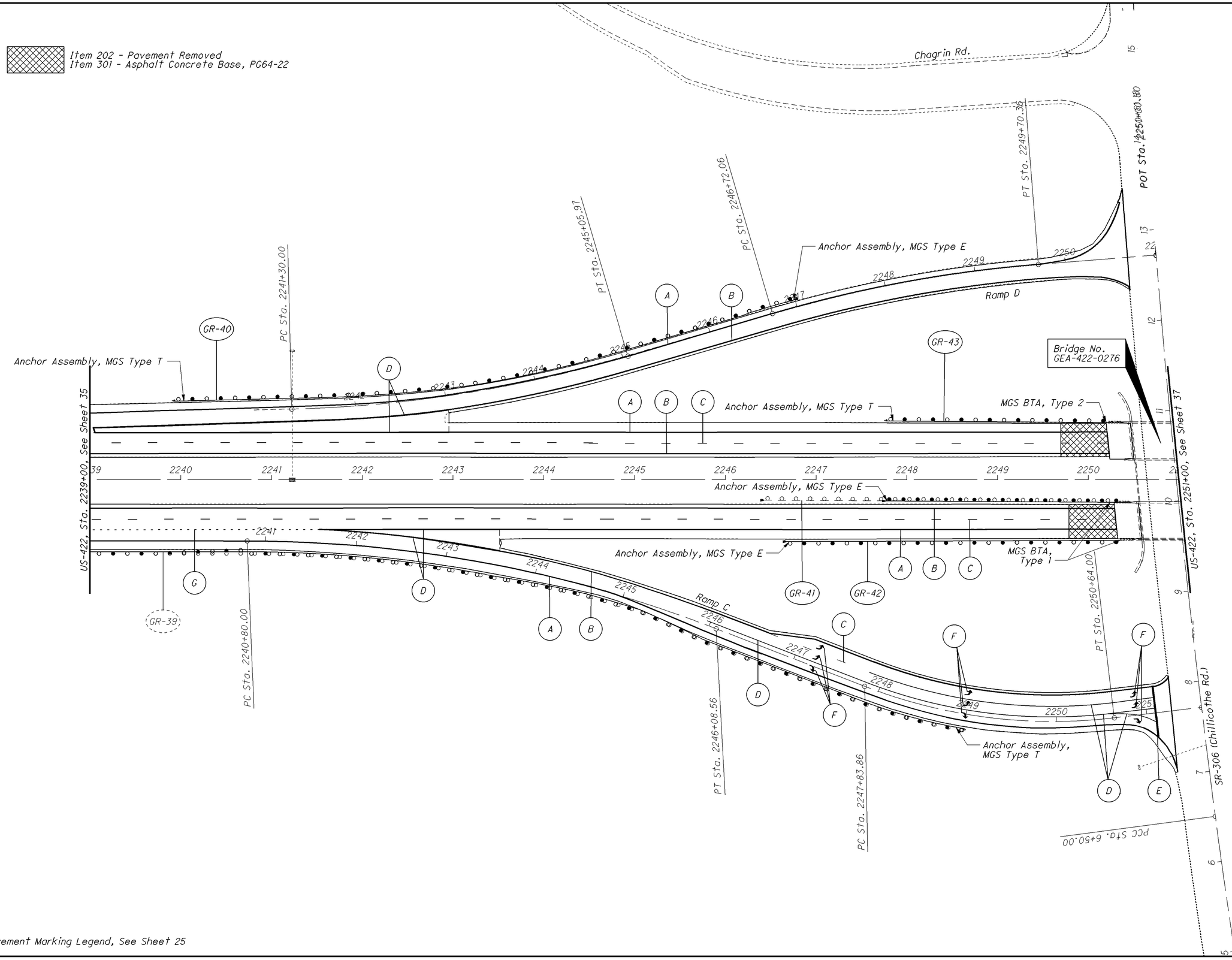
Item 202 - Pavement Removed
Item 301 - Asphalt Concrete Base, PG64-22



For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2239+00.00 to Sta. 2251+00.00

CUY/GEA-422-18.31/0.00

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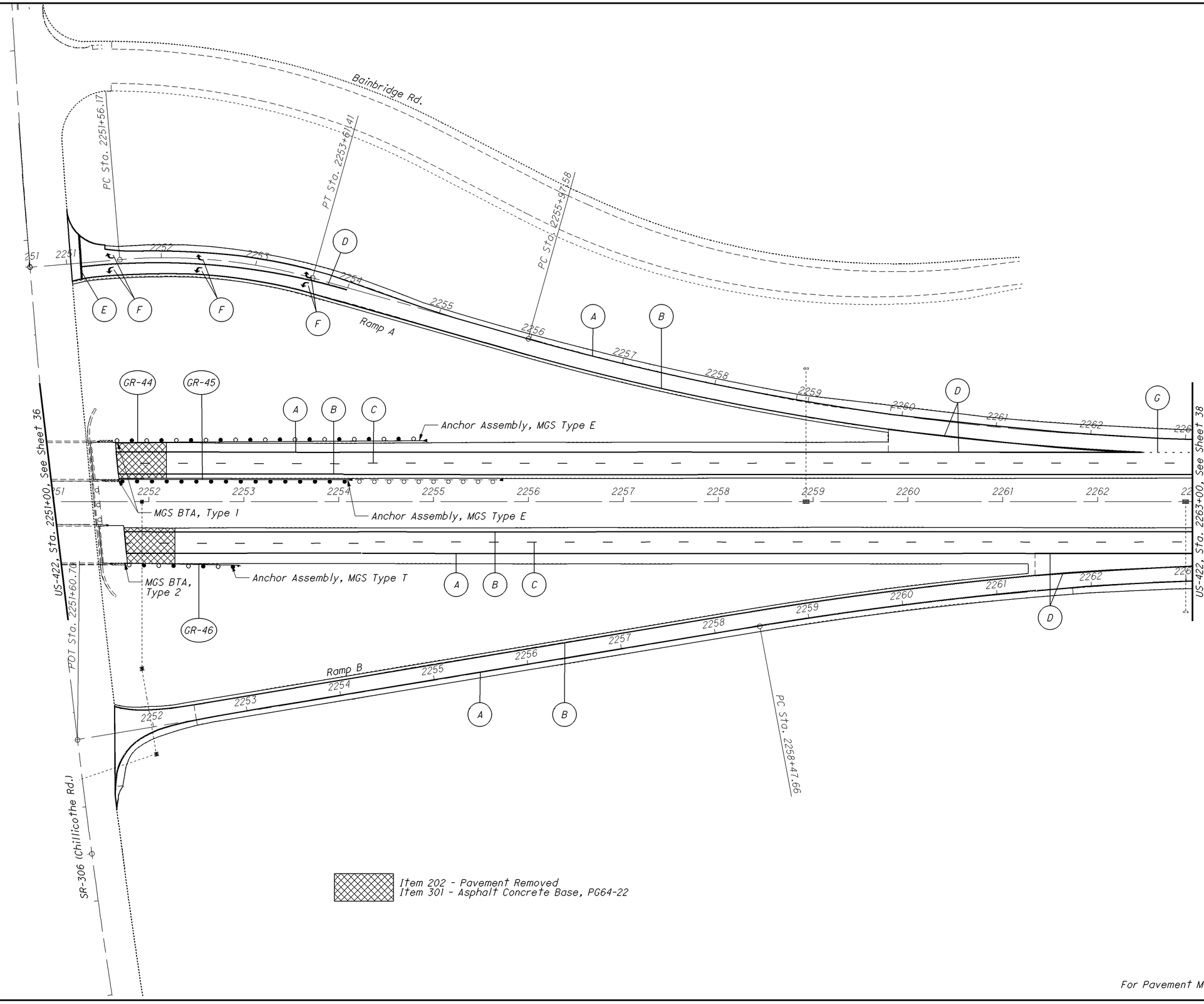

For Pavement Marking Legend, See Sheet 25

HORIZONTAL SCALE IN FEET
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CALCULATED JAC
CHECKED KDH

GENERAL PLAN
US-422, Sta. 2251+00.00 to Sta. 2263+00.00

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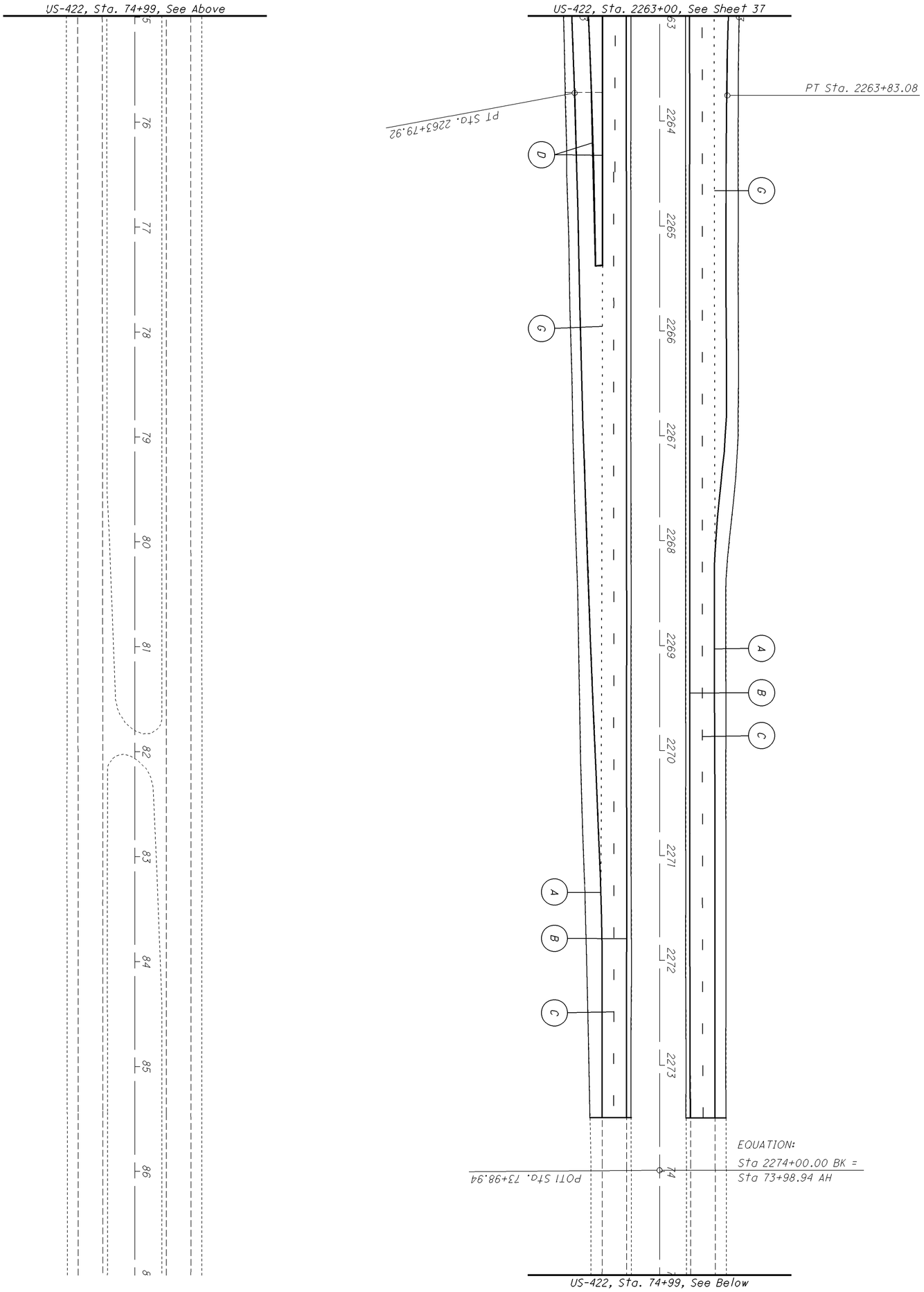


For Pavement Marking Legend, See Sheet 25

CUY/GEA-422-18.31/0.00

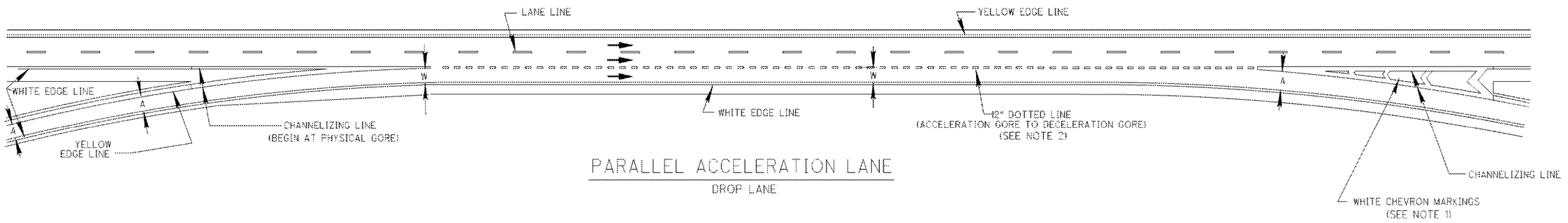
GENERAL PLAN

US-422, Sta. 2263+00.00 to Sta. 86+99

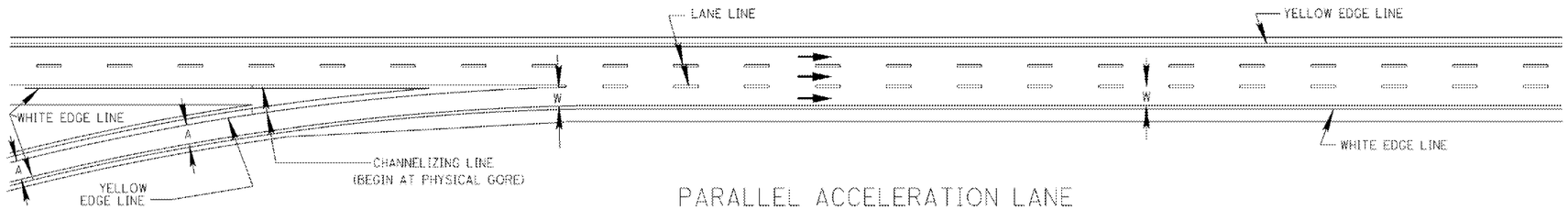
CALCULATED JAC

CHECKED KDH

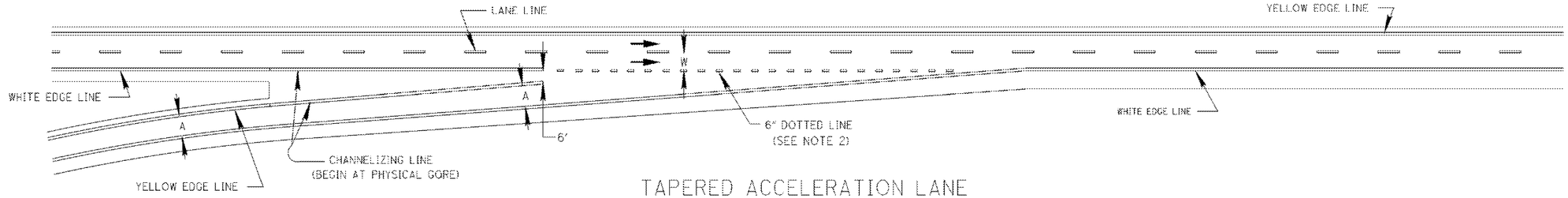
0 50 25 100 HORIZONTAL SCALE IN FEET



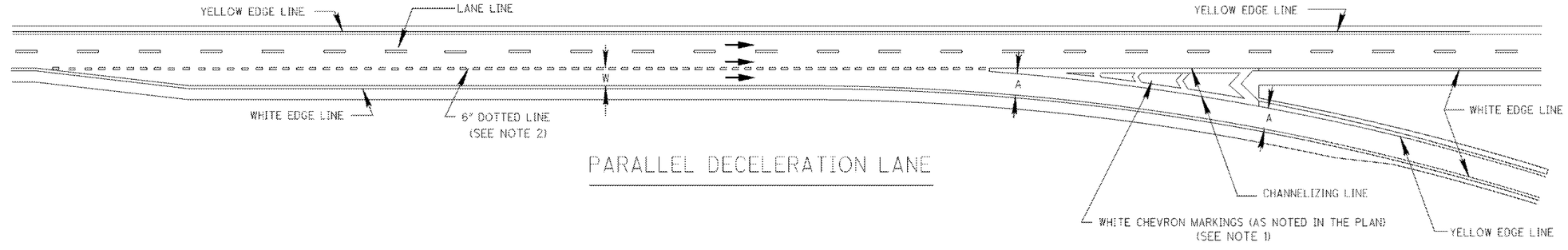
PARALLEL ACCELERATION LANE
DROP LANE



PARALLEL ACCELERATION LANE
ADD LANE



TAPERED ACCELERATION LANE



PARALLEL DECELERATION LANE

NOTES

1. Chevron markings when used in neutral areas of exit ramps are 24 inch wide lines and are placed at the spacing shown in the Chevron Markings Spacing Table.

2. Dotted lines are white dotted line segments 3 feet in length separated by 9 foot gaps.

CHEVRON MARKINGS SPACING TABLE

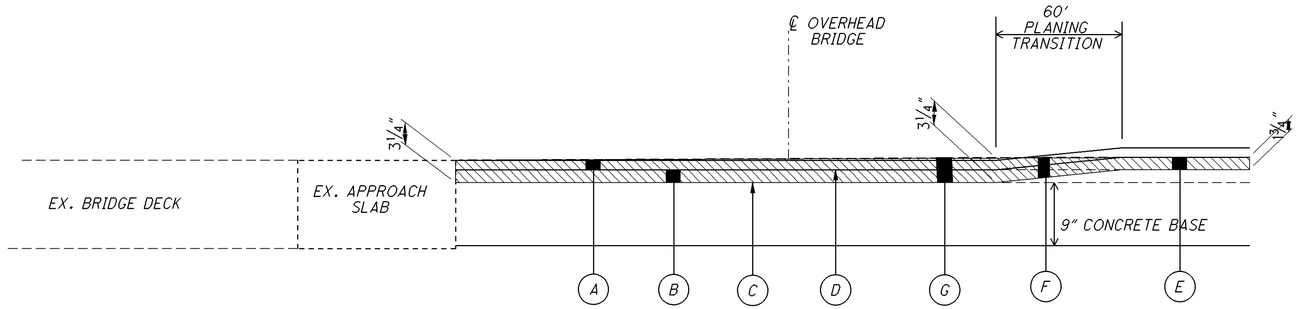
FROM (feet)	TO (feet)	CHEVRON MARKINGS SPACING (feet)
0	48	12 on Centers
49	96	24 on Centers
97	Greater than 97	48 on Centers

A = UNIFORM RAMP WIDTH
W = LANE WIDTH
→ = DIRECTION OF TRAVEL

CALCULATED JAC
CHECKED KDH

ENTRANCE AND EXIT PAVEMENT MARKINGS

CUY/GEA-422-18.31/0.00



PAVEMENT TRANSITION AT OVERHEAD AND MAINLINE BRIDGES

DETAIL APPLIES AT STRUCTURES:
GEA-422-0017 SFN: 2801515
GEA-422-0026 SFN: 2801558

- (A) *ITEM 422 - ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (445), AS PER PLAN, 1½"*
- (B) *ITEM 422 - ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (446), 1¾"*
- (C) *ITEM 407 - TACK COAT, TRACKLESS TACK*
- (D) *ITEM 407 - TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE*
- (E) *ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 1¾"*
- (F) *ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 1¾" TO 3½"*
- (G) *ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 3½"*

✳ *STRAIGHT GRADE - THE ASPHALT TRANSITIONS SHALL BE CONSIDERED UNACCEPTABLE IF THE FINAL GRADE VARIES FROM THE DESIRED STRAIGHT GRADE BY GREATER THAN ⅜ INCHES ANYWHERE THROUGHOUT THE LENGTH OF THE TRANSITION. THIS TOLERANCE IS REDUCED TO ¼ INCH FOR THE FIRST 5 FEET ADJACENT TO AN EXPANSION JOINT.*

PAYMENT WILL BE HELD FOR 1 C.Y. OF ASPHALT PER FOOT OF PAVING WIDTH AT EACH TRANSITION LOCATION UNTIL THE TRANSITION IS SHOWN TO BE ACCEPTABLE. THE CONTRACTOR IS TO PROVIDE THE NECESSARY SURVEY WORK TO SHOW THAT THESE STRAIGHT GRADES ARE MET ALONG EACH EDGE LINE AND LANE LINE.

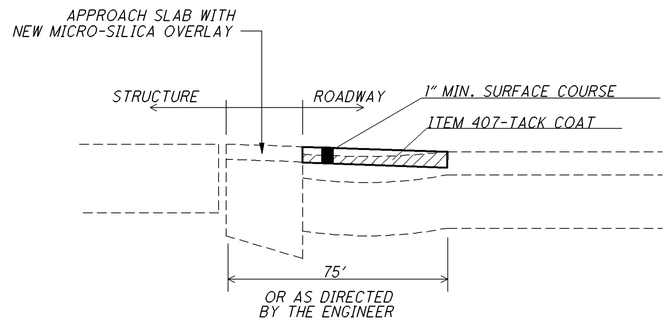
ALL UNACCEPTABLE ASPHALT TRANSITIONS SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE. THE REPAIR METHOD SHALL BE AS FOLLOWS:

A. *DETERMINE FINAL GRADE LINE BY EXTENDING A STRAIGHT LINE FROM THE TOP OF THE BRIDGE END DAM JOINT TO A POINT 75′ AWAY ON THE TOP OF RESURFACING.*

B. *REMOVE ASPHALT CONCRETE EXACTLY 1" BELOW THE FINAL GRADE.*

C. *PLACE ITEM 407 - TACK COAT AND ITEM 446 - ASPHALT CONCRETE, TO DESIRED GRADE.*

D. SURVEY TRANSITION TO VERIFY THAT THE REPAIR IS WITHIN THE ALLOWABLE TOLERANCE.



CORRECTION OF UNACCEPTABLE ASPHALT TRANSITIONS

PAVEMENT TRANSITION DETAILS

CUY/GEA-422-18.31/0.00

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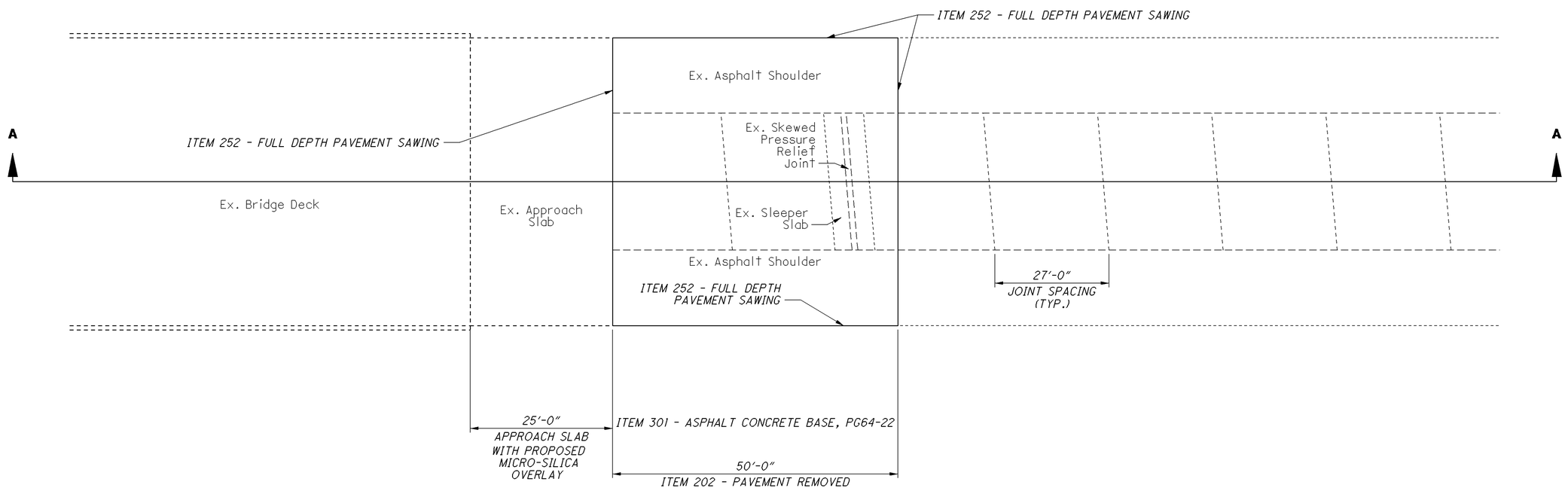
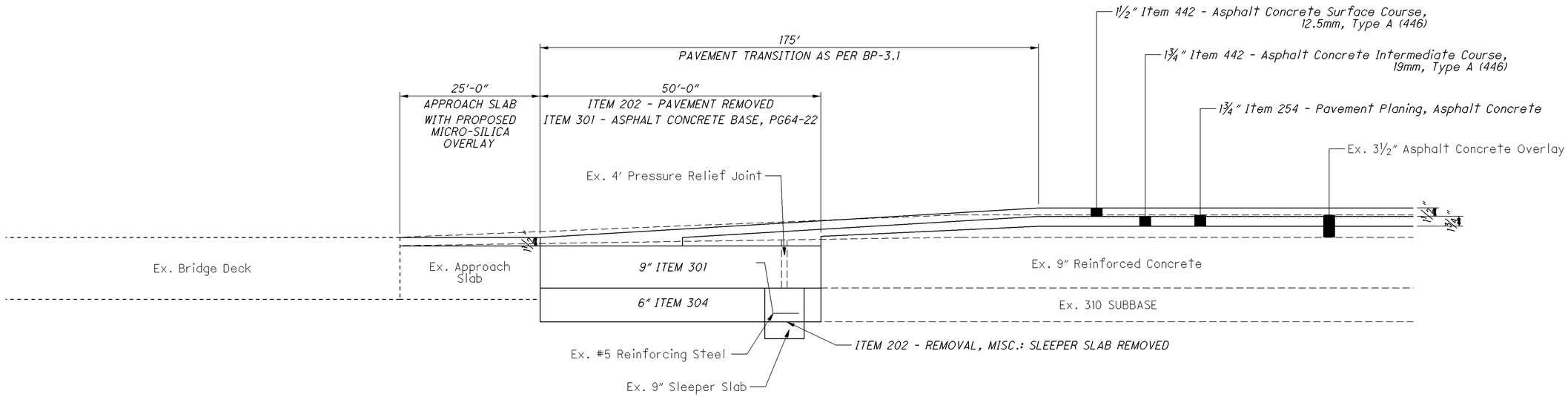


PLAN VIEW

(NOT TO SCALE)

** The Contractor shall create a straight-grade across the bridge deck and approach slab, and then taper the asphalt overlay to meet the edge of the newly overlaid approach slab.*



SECTION A-A

(NOT TO SCALE)

For Replacement Quantities, See Sheet 9 and Sheets 21-22

For Approach Slab and Backwall Details, See Sheets 42 - 44

CALCULATED KDH
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PAVEMENT REPLACEMENT DETAILS

CUY/GEA-422-18.31/0.00

Structures over 20'

Item 847 – Micro-Silica Modified Concrete Overlay, As Per Plan (1½", 2 ¼", 3 ¼", 4" Thickness)
Item 847 – Micro-Silica Modified Concrete Overlay, (Variable Thickness), Material Only, As Per Plan

These items shall be performed per Supplemental Specification 847, "Bridge Deck Repair and Overlay with Concrete Using Scarification and Chipping" with the following revisions:

The thickness of the concrete overlay removal, asphalt wearing course removed, proposed overlay, and/or the depth of scarification and chipping shall be as specified in the plans.

Construction joints will not be permitted in the wheel line.

(See 847.11) The components of the Micro-Silica Modified Concrete shall be proportioned as follows:

Concrete Table
Quantities per Cubic Yard
Aggregates (SSD)

Micro-Silica Overlay Concrete, As Per Plan

Aggr. Type	Fine Aggr (lb)	* #8 Coarse Aggr. (lb)	Aggr. Total (lb)	Cement Cont. (lb)	Micro-Silica (lb)	Water to Cement Ratio	Air Content +/- 2%	** Fiber 1 ¼" Polypropylene (lb)
Gravel	1410	1430	2840	600	50	0.40	8	1
Limestone	1410	1450	2860	600	50	0.40	8	1
Slag	1300	1350	2650	600	50	0.40	8	1

* All coarse aggregate shall have an absorption of 1.00% or greater as defined per ASTM C127

** Fiber mesh shall be 100% virgin polypropylene in a fibrillated-network form and shall be 1¼" in length. (Fiber mesh weights not included in mix design)

The weights specified in the concrete table were calculated for materials of the following bulk specific gravities (SSD):

Material	Bulk Specific Gravity (SSD)
Natural Sand and Gravel	2.62
Limestone Sand	2.68
Limestone	2.65
Slag	2.30
Micro-Silica Solids	2.20
Portland Cement	3.15

The weights in the concrete table shall be corrected for any materials differing by more than ±0.02 from the bulk specific gravity listed above.

(See 847.21) The removal operations shall not begin if sustained rains (5 hours or more with breaks between showers less than 1 ½ hours) are predicted within 48 hours of commencement.

(See 847.21) The final deck sounding may take place within 24 hours of a rain and the deck does not have to be completely dry.

(See 847.29) The wet cure time is reduced from 72 hours to 24 hours or until a beam break of 600psi is achieved, whichever is greater. After the 24 hour wet cure, the finished overlay surface shall be cured by spraying a uniform application of curing material of 705.07, Type 1 or ID, as per CMS 511.17 method (B) membrane curing. If the curing compound cannot be placed within the same short term closure period as the overlay, the Contractor may allow traffic onto the overlay, and shall, at the next available short term lane closure period, apply the membrane curing compound.

(See 847.29) Traffic will not be permitted on the finished overlay surface until after the completion of the 24 hour wet cure and after two test beams have attained an average modulus of rupture of 600psi (4.2 MPa).

(See 847.30) The overlay surface evaporation rate requirements are in effect from 9:30am to 11:00pm. They are not in effect from 11:00pm to 9:30am.

(See 847.31) For each phase the Contractor shall provide enough material for two beam breaks each at 12 hours, 24 hours, 36 hours, and 48 hours. The Department will perform the beam break tests and document the time of the pour, the time of the beam break tests, and the modulus of rupture for each beam break until the modulus of rupture of the two tests is not less than 650psi (4.5 MPa). Traffic is allowed on the overlay at 600psi (4.2 MPa).

If the Contractor cannot commence the concrete pour by 3 AM Sunday, the Contractor shall follow Item Special - Structure, Misc.: Emergency Asphalt Paving Operation on Standby.

In addition to the requirements of Item 847 in CMS, the removal of any waterproofing fabric shall be included. Payment for the waterproofing fabric removal shall be included under Item 847 – Micro-Silica Modified Concrete Overlay using Scarification and Chipping, As Per Plan.

All other requirements of the Supplemental Specification shall remain in effect.

Item Special – Structure, Misc.: Emergency Asphalt Paving Operation on Standby

This item shall apply to all locations where Item 847 is specified in the plans.

The Contractor shall make arrangements to have an asphalt concrete supplier and asphalt paving company on call on Sundays that the approach slab overlay is scheduled. If the Contractor has not started to pour the concrete overlay by 3 AM Sunday, the Project Engineer will direct the Contractor to stop operations and pave the approach slab with asphalt. The asphalt Contractor will have the ability to mobilize operations within 12 hours. This includes providing 448 Asphalt and a paving crew with compaction equipment.

The paving and all existing traffic control must be in place by 5 AM on Monday.

The following items shall be used in this operation:

614, Cubic Yard, Asphalt Concrete for Maintaining Traffic
847, Square Yard, Wearing Course Removed, Asphalt, As Per Plan

The State will pay for all costs associated with placing and removing the asphalt only if the Contractor was not responsible for the delay, otherwise the Contractor shall be required to pay all the costs associated with the placement and removal of the asphalt.

Payment for all of the above shall be made at the unit price bid per each for Item Special – Structure, Misc.: Emergency Asphalt Paving Operation on Standby which shall include all labor, equipment, materials, and incidentals necessary to complete the above work.

Item Special – Patching Concrete Structure, Misc.: Top of Backwall Repair

This pay item is intended for repairing the top of the existing bridge backwalls from above (riding surface), as detailed in the plans. This item shall be used as directed by the Engineer.

Prior to the surface cleaning specified in 519.04 and within 24 hours of placing patching material, blast clean all surfaces to be patched including the exposed reinforcing steel. Acceptable methods included high-pressure water blasting with or without abrasives in the water, abrasive blasting with containment, or vacuum abrasive blasting.

Concrete mix design shall be per Item 847, As Per Plan, as given above.

This item shall be performed as directed by the Engineer. All equipment, labor, materials, and incidentals necessary to perform the above work shall be included for payment per Foot under Item Special – Patching Concrete Structure, Misc.: Top of Backwall Repair.

CALCULATED JAC CHECKED KDH

STRUCTURES NOTES

CUY/GEA-422-18.31/ 0.00
PID No. 23961

LOCATION/BRIDGE NO.												Plan Splits		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
1	2	3	4	5	6	7	8	9	10	11	12	#1	#2						
CUY-422-1827 L 1814958 US-422 WB over Solon Rd.	CUY-422-1827 R 1814966 US-422 EB over Solon Rd.	CUY-422-1894 L 1815148 US-422 WB over RR	CUY-422-1894 R 1815156 US-422 EB over RR	CUY-422-1911 L 1815172 US-422 WB over Liberty Rd.	CUY-422-1911 R 1815180 US-422 EB over Liberty Rd.	GEA-422-0017 L 2801515 US-422 WB over Chagrin River	GEA-422-0017 R 2801523 US-422 EB over Chagrin River	GEA-422-0057 L 2801582 US-422 over McFarland Creek	GEA-422-0057 R 2801604 US-422 over McFarland Creek	GEA-422-0275 L 2801612 US-422-over SR-306	GEA-422-0275 R 2801639 US-422 over SR-306	01/NHS/PV	02/NHS/BR						
																		STRUCTURES OVER 20 FEET	
167	188	160	148	84	84	86	86	87	82	78	78		1328	SPECIAL	51911720	1328	FT	PATCHING CONCRETE STRUCTURE, MISC.: TOP OF BACKWALL REPAIR	41
2	2	2	2	2	2	2	2	2	2	2	2		24	SPECIAL	53000400	24	EACH	STRUCTURE, MISC.: EMERGENCY ASPHALT PAVING OPERATION ON STANDBY	41
						224	224	112	224	224	112		1120	847	10001	1120	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (1.5" ± THICKNESS)	41
270	308	112		112				112			112		1026	847	10001	1026	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (2.25" ± THICKNESS)	41
			224	112	224								560	847	10001	560	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (3.25" ± THICKNESS)	41
		112											112	847	10001	112	SQ YD	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (4" ± THICKNESS)	41
2	4	2	2	2	2	2	2	2	2	2	2		26	847	20001	26	CU YD	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	41
270	308	224	224	224	224	224	224	224	224	224	224		2818	847	30300	2818	SQ YD	WEARING COURSE REMOVED, ASPHALT	
8	8	8	8	8	8	8	8	8	8	8	8		96	847	50000	96	SQ YD	HAND CHIPPING	

CALCULATED JAC
CHECKED KDH

STRUCTURE GENERAL SUMMARY

CUY/GEA-422-
18.31/ 0.00
PID No. 23961

2/3

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44

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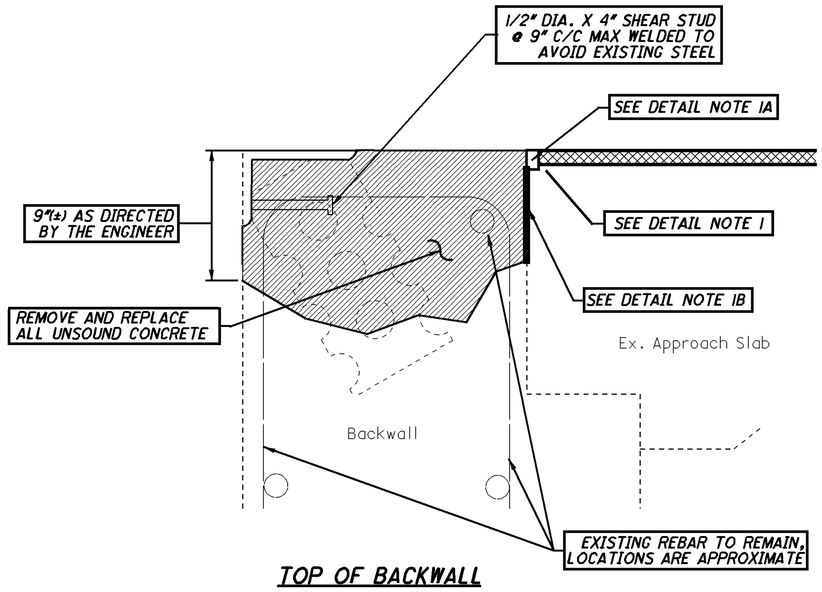
* THE CONTRACTOR SHALL CREATE A STRAIGHT-GRADE ACROSS THE BRIDGE DECK AND APPROACH SLAB, AND THEN TAPER THE ASPHALT OVERLAY TO MEET THE EDGE OF THE NEWLY OVERLAID APPROACH SLAB.



TOP OF BACKWALL

DETAIL NOTES

1. INSTALL JOINT SEAL & WATERPROOFING PER PLAN DETAILS & STD DWG AS-1-81, DETAIL B. ALL LABOR, MATERIALS, EQUIPMENT, & INCIDENTALS REQUIRED TO PERFORM THIS WORK SHALL BE PAID FOR UNDER ITEM SPECIAL - PATCHING CONCRETE STRUCTURE MISC.: TOP OF BACKWALL REPAIR.
   A. PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL, 705.11 (1¼" WIDE FOR A ½" WIDE GROOVE) PLACED IN ½" X 2¼" GROOVE.
   B. TYPE "A" WATERPROOFING.
2. CONCRETE FOR TOP OF BACKWALL REPAIR AND APPROACH SLAB OVERLAY SHALL BE PLACED IN SEPARATE POURS.
3. MATERIAL FOR TOP OF BACKWALL REPAIR SHALL BE AS SPECIFIED UNDER ITEM 847 - MICRO SILICA MODIFIED CONCRETE.

LEGEND

ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, MISC: TOP OF BACKWALL REPAIR

ITEM 847 - MICRO SILICA CONCRETE OVERLAY, A.P.P., ITEM 847 - MICRO SILICA CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, A.P.P. & ITEM 847 - WEARING COURSE REMOVED, ASPHALT

* OVERLAY THICKNESS SPECIFIED ON STRUCTURE GENERAL SUMMARY

NOTES

1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATION PURPOSES ONLY.
2. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA SHEET, FRAMED TEXT, AND/OR DESCRIBED IN GENERAL NOTES.

DESIGN AGENCY: ODOT DISTRICT 12 PLANNING & ENGINEERING DEPT.
REVIEWED: SKP DATE: 2/27/2014 STRUCTURE FILE NUMBER: VARIOUS
DRAWN: KDH REVISED:
DESIGNED: SKP CHECKED: SKP

SUPERSTRUCTURE DETAILS
VARIOUS BRIDGE DETAILS

CUY/GEA-422
18.31/0.00
PID No. 23961

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